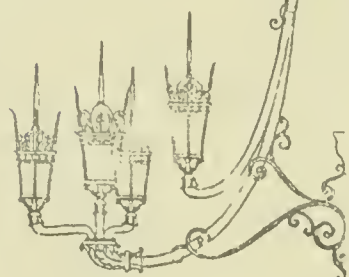


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Proposal for Professional Services

Reconstruction of Pier 3 Charlestown Navy Yard

November 1988

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Submitted by
**Parsons Brinckerhoff
Quade & Douglas, Inc.**

Submitted to
**Boston Redevelopment
Authority**



9-18-88

November 9, 1988

Boston Redevelopment Authority
One City Hall Square - Room 943
Boston, Massachusetts 02201

Attn: Mr. David Carlson
Engineering and Design Services

Dear Mr. Carlson:

Parsons Brinckerhoff is pleased to submit our proposal to provide engineering services relating to the reconstruction of Pier 3 in the Charlestown Navy Yard.

Parsons Brinckerhoff, a 100-year old engineering firm, brings to this assignment strong technical capabilities, managerial skills, and a successful record in the planning and design of new and rehabilitated marine facilities. Our staff of over 2,000 represents multi-disciplined capabilities and vast experience in all facets of marine engineering, geotechnical engineering, site design, environmental analysis, community participation programs, and full service construction management.

Parsons Brinckerhoff has successfully completed design of over 50 new and rehabilitated waterfront facilities nationwide. Our recent and relevant experience here in the Boston area includes On-Shore Pier Facilities for the harbor cleanup program, Castle Island in South Boston, Hoosac Pier, Long Wharf and Gloucester State Fish Pier. In addition, Parsons Brinckerhoff has worked closely with the Authority on the Phase 1 portion of the Navy Yard rehabilitation. As a result of our active participation on the project, we have become thoroughly familiar with the site and have gained a special appreciation of the Authority's goals and objectives for this project.

The reconstruction and extension of Pier 3 will create a valuable addition of waterfront open space and will provide an opportunity to expand the recreational facilities under the City's Harborpark Program. The team we have assembled has both the proven talents to develop sound engineering solutions for the pier reconstruction and the special skills to develop the appropriate program for the needed open space and recreational uses of the Pier.

Serving as subconsultant to Parsons Brinckerhoff are three highly qualified firms. We are pleased to offer the services of the Halvorson Company, a highly regarded landscape architecture and site engineering firm. Their relevant experience includes an Open Space Plan for the City of Boston, waterfront parks at Revere Beach, the Marine Industrial Park, Lechmere Canal, Wentworth-by-the-Sea, and Newburyport. The firm is currently working with Parsons Brinckerhoff on the Post Office Square Park linking Boston Common with the waterfront. We are also joined by Bryant Associates, Inc., a Minority Business Enterprise who will provide survey and utility services on the Pier. Kimball Associates, Inc., a Women's Business Enterprise, will provide mechanical/electrical engineering services for this assignment. The latter two firms recently completed with Parsons Brinckerhoff the design of the On-Shore Pier Rehabilitation Project in Charlestown.

Boston Redevelopment Authority

November 9, 1988

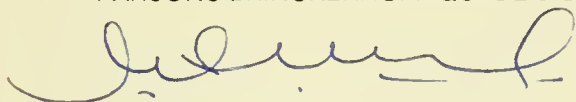
Page 2

We have designated and committed to this assignment seasoned professionals highly skilled in marine facilities. We are pleased to designate Eldon Abbott, P.E. as project manager. Eldon has over 16 years of experience including the management of several marine rehabilitation projects in the Boston area and elsewhere in New England. His involvement in projects such as the Castle Island Terminal, Hoosac Pier, Long Wharf and other marine projects provide him with the right skills and also the knowledge of the development needs and regulatory requirements for this project.

We believe the material contained in this submittal demonstrates our understanding of the project issues and our strong capabilities for this assignment. We are enthusiastic about undertaking this challenging project and look forward to the opportunity to provide these services to the Authority.

Very truly yours,

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.



Morris S. Levy, P.E.
Senior Vice President

MSL/bmh

Enclosure

Project Understanding and Approach

Project Context

The rehabilitation and extension of Pier 3 in the Charlestown Navy Yard is one of the primary initiatives undertaken by the Boston Redevelopment Authority to expand recreational and open space opportunities on the Boston Waterfront under the City's Harborpark Program. The Charlestown Navy Yard, an operating United States Naval Shipyard from 1800 to 1974, is now substantially owned by the Boston Redevelopment Authority, and is emerging as one of the most dramatic and successful mixed-used waterfront redevelopment projects in the country. Pier 3 is located at the southwest corner of the 105-acre portion of the Navy Yard owned by the Boston Redevelopment Authority, and forms a natural boundary line with the 30-acre western portion of the Navy Yard owned by the National Park Service, and operated by the National Park Service and United States Navy as a National Historic Park featuring the USS Constitution.

The existing Pier 3 (built in 1893) is the concrete-capped, sheet-piled stub of a 200-by-85 foot asphalt pier supported by capped wooden pilings, which sits in 26 feet of water at mean high tide. The current uses on the deteriorating pier include: temporary headquarters for the New England Historic Seaport's Educational Boat Building School (teaching the craft of old-fashioned wooden boat building), temporary short-term surface parking, and docking for the New England Historic Seaport's museum ships: the wooden sloop "Spirit of Massachusetts", and the lightship "Nantucket II". It is anticipated that these or similar public museum uses will be integrated into the expanded public-use program slated for Pier 3.

The Boston Redevelopment Authority intends to reconstruct the existing Pier 3 and to extend the existing Pier's original footprint, to a total length of approximately 580 linear feet, southward to the limit of the United States Pierhead Line of 1939. This extension will create approximately 35,000 additional square feet of public recreational and open space on Pier 3 within the Shipyard Park Parcel. It is the goal of the Boston Redevelopment Authority to program this valuable addition of waterfront open space with attractive and much needed uses such as park area, boating facilities, fishing areas, and public dock space, as well as other related public recreational uses. The existing bulkhead will require analysis and stabilization; the remaining portion of the 1893 Pier 3 structure requires an assessment in terms of its capacity to allow new construction. The engineering and design services requested herein will be the first major step toward achieving this increased public open space.

The public recreational programming for Pier 3 will include a boardwalk with railings, public seating, covered shelter(s), landscape planters, lighting, trash receptacles and rest rooms, and a possible small amphitheater or stage area and/or concession stand. The boating facilities will include gateways and ramps, small and large boat docking platforms, and utility connections. The fishing area should be separated from the main pedestrian path of the boardwalk. All areas will be handicapped accessible.

Key Issues

The successful completion of this project will include the resolution of a variety of engineering, landscape architecture, marine use and recreational programming issues including:

- o Sensitivity and appreciation of the Navy Yard heritage and value to the City of Boston and its emerging waterfront. Parsons Brinckerhoff, an engineering firm which recently celebrated its 100th anniversary, brings to this assignment a long list of achievement and a heritage of engineering excellence. We have a particular awareness for the preservation and restoration of early civil engineering works. Our recent involvement with the Authority during Phase I of the Navy Yard Rehabilitation provides us with the familiarity of the project site and knowledge of its constraints and opportunities
- o The proposed improvements must be harmonious and compatible with the ongoing and planned improvements at the Navy Yard. The proposed boardwalk, railing, light standards, benches, and other surface features should complement the Navy Yard setting and the preliminary work recently completed.
- o Close and continual cooperation with the Authority, the National Park Service and other abutters will be required to arrive at a consensus for the proposed public recreational programming for Pier 3.
- o Experience in evaluation of marine structures and development of rehabilitative techniques. Parsons Brinckerhoff has an extensive experience record in pier evaluation and rehabilitation in the Boston area including:
 - On-Shore Pier Facilities. Inspection, evaluation and rehabilitation of the Revere Sugar site in Charlestown and the General Dynamics Ship Yard in Quincy.
 - Phase I Rehabilitation, Charlestown Navy Yard. Evaluation, planning, design and construction phase services for new utilities, roadways, sidewalks, public park and building restoration.
 - Castle Island Container Terminal. Rehabilitation and extension of existing general cargo facility.
 - Hoosac Pier, Charlestown. Condition survey of existing bulkheads and rehabilitation design.
 - Long Wharf. Inspection and design for repair of 17th century stone wall and design of shelter and park.

Our strong relevant experience, knowledge of the City of Boston, and the design and permitting process will facilitate the successful implementation of this important assignment.

- o Understanding the needs of maritime interests. Pier 3 is currently the temporary headquarters for the New England Historic Seaport's Educational Boat Building School, the wooden sloop "Spirit of Massachusetts" and the lightship "Nantucket II". The proposed uses at Pier 3 will include fishing and expanded public dock space.



Each of these uses will require utility connections including full marina service, water, power, telephone and sewerage. Additional needs include parking, lighting, security and other services. Special marine needs may include boat launching equipment, fishing deck, floats, gateways, ramps, large boat docking platforms and bollards.

- o Ability to expeditiously complete the Scope of Services. Parsons Brinckerhoff and its team of subconsultants have the necessary experience and available staff resources to complete this assignment. Having recently completed the MWRA's On-Shore Pier Facility project, we have an experienced project team ready to start this project immediately without delay. This team will be assigned and committed to this assignment.



Recently completed boardwalk and lighting sets the tone for the proposed Pier 3 rehabilitation program.



Programming for Pier 3 will include the lightship Nantucket II, a valuable maritime resource.



Future space and marine needs of the New England Historic Seaport project will be an important element of this project.



Expanded dock space and support services will be developed as part of this project.



Relevant Experience

One Hundred Years of Engineering Excellence

A century ago in 1885 William Barclay Parsons established a consulting engineering firm in New York City. Today the firm that General Parsons founded is over 1900 people strong, and the single office has grown to more than 40 offices around the world.

Energetic leadership in waterfront engineering thrives at Parsons Brinckerhoff. During the last decade alone the firm has completed hundreds of ports and marine facility projects worldwide with a construction value of over \$3 billion. Not only has the firm received many awards for outstanding design and rehabilitation of ports, harbors and terminal facilities, but Parsons Brinckerhoff continues to introduce innovative techniques in engineering and construction.

Parsons Brinckerhoff is particularly well qualified in the specialized area of structural integrity, inspection of piers, wharfs, and bulkheads. Our qualifications include:

- . A successful record in the planning, design and construction management for more than 200 diverse marine facilities.
- . Qualified personnel with up-to-date technical knowledge and current waterfront inspection and rehabilitation experience.
- . The technical resources required for in-depth inspections, from field inspection, structural evaluation and ratings, to report preparation, including alternative repair schemes and cost estimates.
- . A large multi-disciplinary staff which enables us to provide support services in such areas as geotechnical, mechanical and electrical engineering, surveying, utilities, and construction services.

The project descriptions that follow demonstrate our experience relevant to the designs of the proposed Pier 3 rehabilitation project.

On-Shore Pier Facilities Boston and Quincy, Massachusetts

Parsons Brinckerhoff is currently providing engineering services to the Massachusetts Water Resources Authority for the inspection, evaluation and rehabilitation design for the Revere Sugar Pier in Charlestown and General Dynamics Shipyard in Quincy. The two sites will serve as staging facilities for the transshipment of construction materials from the mainland to Deer Island during the construction of new Wastewater Treatment Facilities.

The firm's responsibilities on this important project included the following:

- . Field and hydrographic surveys.
- . Wharf structure inspection.
- . Utility survey.
- . Geotechnical program.
- . Bulkhead pier and wharf design.
- . Planning for terminal layout.
- . Design of ferry ramp bridge.
- . Support mechanical and electrical services.

Portland Fish Pier, Portland, Maine

Parsons Brinckerhoff is responsible for site inspection, preliminary design, construction staging plan, estimated construction costs, permit applications, construction contract documents and equipment procurement documents for this \$15 million project.

Hoosac Pier Study, Boston, Massachusetts

Parsons Brinckerhoff conducted a geotechnical investigation of Hoosac Pier for the Massachusetts Port Authority. The work included condition survey of existing bulkheads, an analysis of load capacity on existing foundations, and estimates of vehicular and pedestrian traffic generated by future land use development alternatives.

Castle Island (Conley) Container Terminal, Boston, Massachusetts

Parsons Brinckerhoff recently completed providing A/E services to the Massachusetts Port Authority for the planning, design, and preparation of contract drawings and specifications for new \$18 million modern container terminal facilities at Castle Island, Boston.

Two rail-mounted, electrified, low profile container gantry cranes have been installed. New shore facilities include a marine yard operations building, an entrance complex with truck scale and scale house, administrative offices, paved container staging areas, new area illumination, security fencing and utilities. The container terminal started operations in late 1981. In addition to planning and design, the firm also provided inspection services.

The firm's responsibilities on this fast-track project included design and construction supervision services associated with the following:

- . Surface, subsurface, under wharf and underwater condition survey.
- . Rehabilitation and upgrading of the existing timber wharf structure with a reinforced concrete deck and pile caps.
- . Widening of the existing deck.
- . Construction of crane rail foundations to support container crane runway.
- . Extension of existing cargo and bunkering petroleum pipes.
- . Construction of utilities, electrical distribution system and ship services.
- . Construction of paved storage area for containers.
- . Complete construction management and inspection services.

Head of the Harbor Fish Pier, Gloucester, Massachusetts

For the Massachusetts Government Land Bank and the Gloucester Redevelopment Authority, Parsons Brinckerhoff prepared the final design, contract documents and specifications, and provided on-site construction management for berthing and commercial fish processing facilities at Head of the Harbor in the inner Harbor at Gloucester, Massachusetts.

The project included:

- . Dredging of the inner harbor
- . Addition of 0.9 acre of reclaimed land created with dredged fill material
- . Construction of a containment dike
- . Extension of two existing storm drains

The Gloucester Harbor, an important site of export trade, handles more than 250,000 tons of frozen fish annually. The Head of the Harbor site, however, was a rundown and blighted waterfront area, and the fish pier project is part of major facelift. Adding the needed berthing and fish processing facilities enhances the area's overall appearance, and provides support for export activities. A 3.8-acre site was created for the fish processing center by using dredged fill material to add 0.9 acre of reclaimed land to the existing site.

A riprap containment dike formed the retaining structure for the additional fill. Two 31-foot-wide reinforced concrete marginal wharfs, totaling 700 feet in length, were constructed along the containment dike. Two existing storm drains were extended to outfall beyond the containment dike structure.

The wharfs were designed to support fully loaded trailer trucks, cranes, and a variety of fish off loading equipment. One fish processing plant is under construction and three more will be built adjacent to the wharfs.

Heavy Lift Facility, Quonset Point, Rhode Island and Groton, Connecticut

Parsons Brinckerhoff prepared final design, construction documents, and provided resident engineering services for marine facility associated with heavy lift barge loading facility. This included mooring facilities, fenders, and rehabilitation of an existing steel sheet pile bulkhead.

Jourdan Road Terminal, New Orleans, Louisiana

For the Port of New Orleans, Parsons Brinckerhoff prepared alternative layouts and designs for a new general cargo, container, and RO/RO terminal along the Mississippi River-Gulf Outlet, on site partially enclosed by a hurricane protection levee. The ten-berth terminal was developed in phases. The site is characterized by very poor subsurface conditions. A "stone column" method was developed to reinforce existing soils. For the first phase of development, in addition to berthing facilities, the approved scheme provided access roadway, railroad trackage, utilities, outside storage areas, and a 140,000 square foot transit shed protected by a sprinkler system. Following approval for the recommended scheme, Parsons Brinckerhoff prepared contract documents and provided shop drawing review and consultation services during construction.

The facilities included the restoration/modernization of a timber-pile-supported wharf. Timber piles and deck were inspected, evaluated, and either restored or replaced. New piles and pile caps were provided to support the container cranes and the timber bulkhead was restored.

Portsmouth Marine Terminal, Norfolk International Terminal, Virginia

For various state and city agencies Parsons Brinckerhoff provided planning design and inspection services for the Portsmouth Marine Terminal. The assignment included design of berthing facilities, upland facilities and container handling equipment. The firm prepared contract documents, specifications, inspection, and cost estimates for container and general cargo facilities.

Seatrain Terminals, Weehawken, New Jersey, Oakland, California, Hawaii

For the private client, services were provided for three of their container terminals. At Weehawken, site planning, structural investigation, design and technical inspection services were provided for a container handling pier. At Oakland, design and inspection services were provided for a container wharf, and in Hawaii, inspection services were provided for the container crane erection.

Coal Barge Transportation and Dock Study, Geisma, Louisiana

For United Engineers and Constructors who were investigating the construction of a coal-fired plant for the Uniroyal Chemical Company, Parsons Brinckerhoff performed engineering and transportation studies. The firm provided design concepts and cost estimates for the capital facilities required to implement barge unloading; an engineering, permitting and construction schedule; and estimates of barge transportation costs from various coal sources upriver.

Container Pier for Seatrain, Inc., Weehawken, New Jersey

The firm provided full design services for preliminary planning to final design drawings, specifications, cost estimates, contract documents and supervision of construction for a new pier 120 feet wide by 960 feet long. The project was completed on a "fast-track" basis and received the American Concrete Institute Award of Merit for outstanding concrete structures.

Hoboken Pier B, Reconstruction Estimate, New Jersey

Parsons Brinckerhoff provided for the Port Authority of New York and New Jersey reconstruction alternatives for Hoboken Pier B, a timber-piled pier destroyed above the water line by a fire in October 1980. We reviewed the diver's report and conducted an above-water field investigation to determine the existing conditions. Alternative reconstruction schemes were evaluated and a detailed cost estimate prepared for the most economical scheme in support of the Port Authority's insurance claim. Structural, architectural, and utility work were included.

Port Authority Passenger Ship Terminal, New York City

In 1984 Parsons Brinckerhoff undertook the structural integrity investigation of the New York City Passenger Ship Terminal for the Port Authority. The terminal consists of Piers 40, 88, 90, 92 and 94 along the Hudson River in the borough of Manhattan. All structural elements were inspected and an underwater inspection conducted. When Significant deterioration was uncovered, structural calculations were completed to determine its effect on the structural integrity of the piers and load restriction. Temporary repairs were recommended, and contract documents prepared for the permanent repairs.

Port Improvement Project, St. George's, Grenada

The Government of Grenada retained Parsons Brinckerhoff to prepare plans for the rehabilitation of the existing 1200-foot-long sheet pile wharf and badly spalled concrete coping. Inspections were performed above and below the waterline. Repair of the 20-year-old wharf included cutting back concrete to expose the reinforcement and allow new concrete to be bonded to the structure.



Lamberts and Seawells Point Facilities, Norfolk, Virginia

The Lamberts and Seawells Point facilities, which include Piers S and L, are inspected annually by Parsons Brinckerhoff for the Virginia Port Authority and the Norfolk and Western Railway Company. These investigations include underwater inspections of piling, under-and-above-deck inspections of pier structures and bulkheads, and inspection of all buildings and utilities. The annual report includes descriptions of conditions and estimates of cost for the recommended repairs.

Pier 4, U.S. Naval Station, Norfolk, Virginia

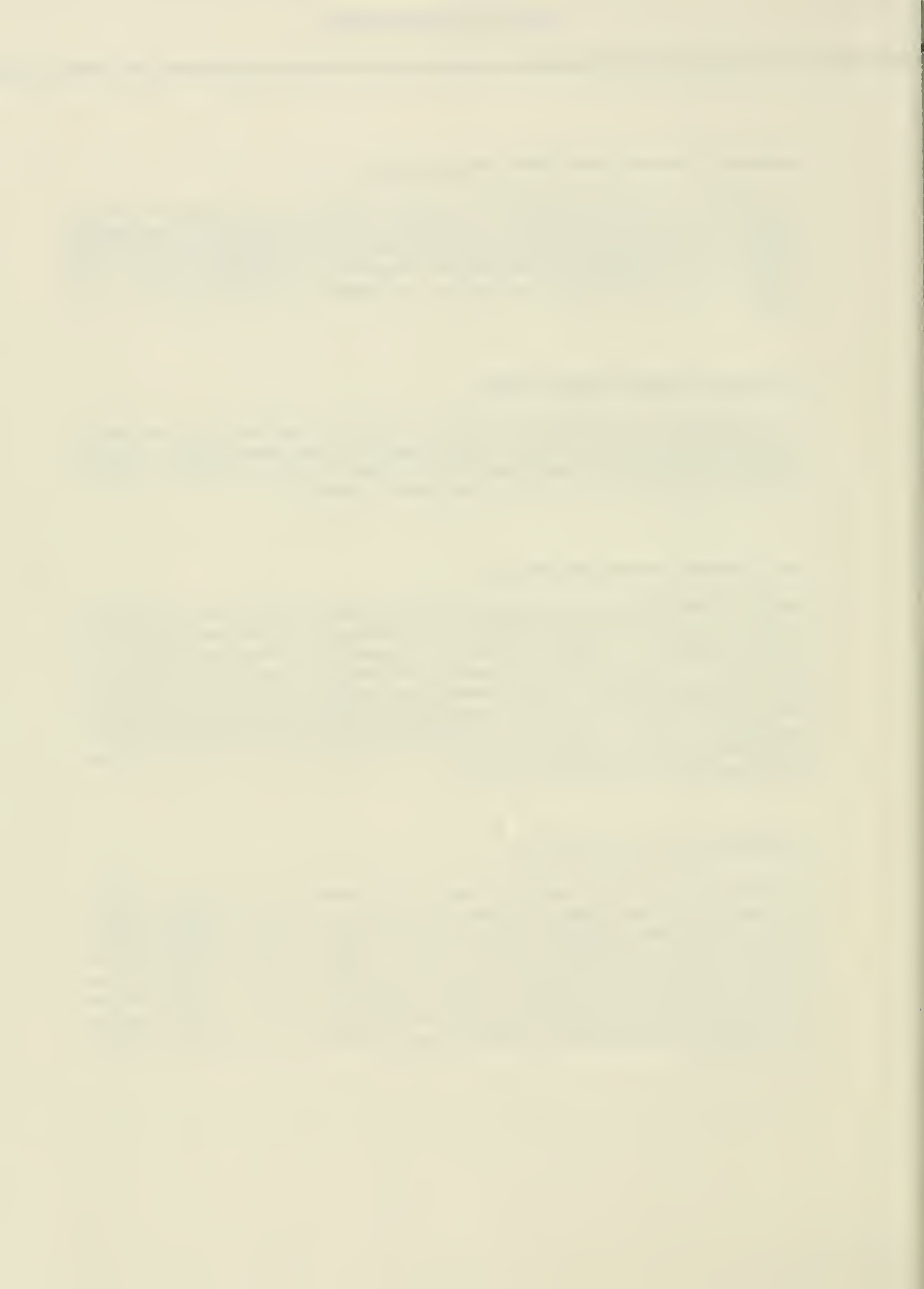
Pier 4, constructed with an earth-filled central area retained by steel sheet piling, had suffered damage caused by the fill materials leaking through the deteriorated sheeting. Parsons Brinckerhoff performed an in-depth inspection of the bulkhead and recommended methods of restoring the pier capacity with a minimum of disruption to operations.

Pier 94 Container Terminal, San Francisco

Parsons Brinckerhoff performed engineering consulting services for the design of the subsistence correction at Pier 94, Port of San Francisco. The assignment for the City and County of San Francisco required the investigation, engineering, and preparation of contract documents for the pier's repair. Two of the problems revealed by the inspection were: (1) since the pier's construction, approximately 2 1/2 feet of settlement had occurred over the length of the pier and upland area, and (2) a hidden operational hazard existed at the juncture of the pier structure with the landfill area. Leaching or piping of the fill material had reduced the capacity of the pavement to transfer loads to a proper subgrade, creating potholes, an unforeseen hazard. Various measures were recommended to mitigate these problems.

Toledo Port Development, Toledo, Ohio

Parsons Brinckerhoff started its association with the development of the Port of Toledo in 1957, when new facilities were needed to handle the increased movement of waterborne freight generated by the opening of the St. Lawrence Seaway. Services provided to the Toledo-Lucas County Port Authority over the years for their 125-acre, 8-berth international cargo facility have included port planning, engineering services required in connection with a revenue bond issue, detailed engineering design, preparation of contract documents, preparation of construction cost estimates and schedules, coordination of phased construction contracts, and technical inspection of construction. Parsons Brinckerhoff currently inspects and reports on the condition of the facility every three years.



Commercial Ports, El Salvador

For the Executive Commission of the Port of Acajutla, Parsons Brinckerhoff surveyed the three major commercial ports of El Salvador at Acajutla, La Libertad, and La Union. Tasks carried out by the firm as part of the study included the inspection and evaluation of the physical condition of the harbors, piers, buildings, and ancillary structures. The final report prepared by Parsons Brinckerhoff comprised recommendations for initial and succeeding improvements as well as expansion of port facilities to serve the country's growing foreign commerce.

Newport News Shipbuilding and Dry Dock Company, Newport News, Virginia

Parsons Brinckerhoff is currently providing planning and engineering services for this shipyard which includes modification to existing structures and the construction of new structures to facilitate an expanding shipbuilding program. Existing timber piles and structures have been inspected and evaluated for possible use in the new facilities.

Pier 26 - New York, New York

Designs were prepared for the rehabilitation of this open-deck pier and for the construction of a storage shed. This pier was constructed of concrete slabs supported on timber piles.

Pier 9 - Jersey City, New Jersey

Condition surveys were performed of this steel-framed pier deck structure to determine the most economical means of restoring the deck capacity.



Parsons Brinckerhoff Quade & Douglas, Inc.



Harvard Square Station Cambridge, Massachusetts

- \$70 million multi-level underground station
- 1,800 ft. of tied-back slurry walls
- 1,000 ft. of sheeted and braced excavation
- First application of slurry walls as permanent structure in transportation facility
- Research to advance state-of-the-art slurry wall design and construction

SERVICES:

- Civil/Structural Design, Mechanical and Electrical
- Geotechnical Engineering
- Extensive geotechnical studies including Integral Sampling Method

CLIENT:

- Massachusetts Bay Transportation Authority (MBTA)

Long Wharf Ventilation Shaft Blue Line Subway Boston, Massachusetts

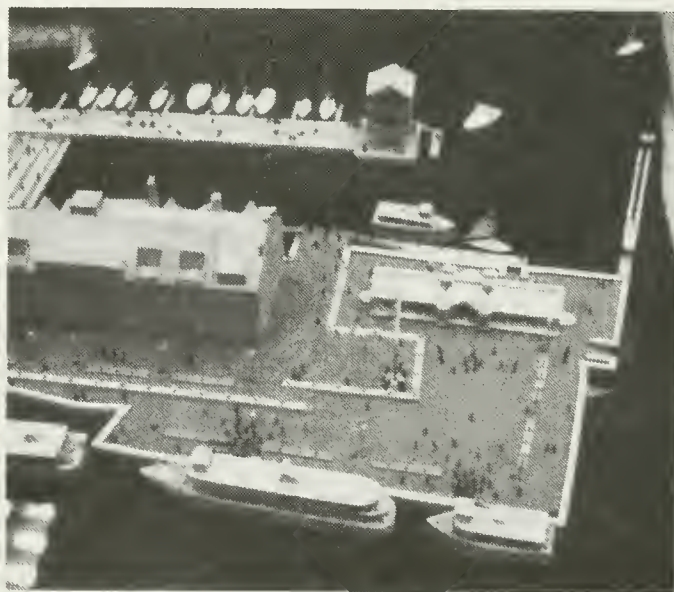
- \$7 million underground facility
- 80-foot deep, ventilation shaft
- 100-foot deep, slurry walls
- Provision for urban park above and around structure
- Protection of adjacent historic structures

SERVICES:

- Complete design and construction phase services, mechanical ventilation
- Installation and monitoring of ground movement instrumentation

CLIENT:

- Massachusetts Bay Transportation Authority (MBTA)



**Parsons
Brinckerhoff**



Parsons Brinckerhoff Quade & Douglas, Inc.



South Cove Subway Boston, Massachusetts

- \$20 million subway tunnel and underground station
- 1,500 ft. of cut-and-cover subway
- 800 ft. of slurry walls
- Flexibility provisions for development on top of subway structure

SERVICES

- Complete design and construction phase services

CLIENT:

- Massachusetts Bay Transportation Authority (MBTA)

Rowes Wharf Development Project Boston, Massachusetts

- \$300 million development
- Underground 5-level parking
- Value engineering for underground construction and waterfront structures
- Slurry walls and caissons
- Site development/major utilities
- Agency coordination

SERVICES:

- Site and value engineering, permits

CLIENTS:

- The Beacon Companies



**Parsons
Brinckerhoff**



Parsons Brinckerhoff Quade & Douglas, Inc.



South Braintree Parking Garage Braintree, Massachusetts

- 1,200-car four level parking facility
- Express ramps minimize traffic impacts
- Internal circulation aids users
- Award for Design Excellence

SERVICES:

- Complete design and construction phase services

CLIENT:

- Massachusetts Bay Transportation Authority (MBTA)

Copley Place Development Project Boston, Massachusetts

• \$500 million multi-use development complex site developer

• Garage access ramps

• Alternative design for decking over Turnpike

• Flexible provisions for surface landscaping

• Major utility relocation

• Agency Coordination

• Ventilation

SERVICES:

• Preliminary and final site design, and resident engineering services

CLIENT:

• Urban Investment and Development Company



**Parsons
Brinckerhoff**

Experience Matrix

Parsons
Brinckerhoff

	Waterfront Rehabilitation	Multi-Use Development	Structural Engineering for Major Projects	Major Parking Garage	Site Development/ Utilities	Environmental/ Traffic Analysis
Copley Place		●	●	●	●	●
Boston Naval Shipyard	●	●			●	
Hoosac Pier	●	●	●			●
Braintree Station Complex			●	●	●	●
Firehouse Block, Concord, NH		●		●	●	●
Castle Island Container Terminal	●		●		●	●
New York City Convention Center	●	●	●		●	●
Head of the Harbor Fish Pier	●		●		●	
Portsmouth Naval Shipyard	●					●
White Plains Parking Facility				●		●
Long Wharf Rehabilitation	●	●	●		●	
Portland, Maine Fish Pier Project	●		●		●	●
North Haven Mall Development	●	●				●
Casco Bay Ferry Terminal	●				●	●
North End Parking Garage				●	●	●
Harvard Square Station			●		●	

PARSONS BRINCKERHOFF
MARINE PROJECT EXPERIENCE
(Continued)

	Work Elements											Services													
	Upland Development	Demolition	Tie-in Existing Structures	Marginal Wharf and Bulkheads	Concrete Pier/Deck	Fendering	Docking Hardware	Utilities and Ship Services	Dredging, Filling and Disposal	Breakwater	Pier on Piles	Equipment	Condition Surveys	Site and Soil Investigations	Preliminary Design	Construction Planning	Cost Estimating	Operations and Equipment Review	Environmental Evaluation	Final Design and Contract Documents	Shop Drawing Review	Record Drawing Preparation	Construction Management	Construction Inspection	Procurement Assistance
VLCC Tanker Terminal Cape Town, South Africa	●		●		●	●	●	●		●	●	●	●	●	●	●	●	●	●	●					
Fish Fleet Harbor Atcajutla, El Salvador				●	●	●	●	●	●	●		●		●	●	●	●	●	●	●	●				
LNG Tanker Loading Facilities Marsa El Brega, Libya	●		●		●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●
Petroleum Pier Rehabilitation Punto Fijo, Venezuela			●	●	●	●	●	●				●	●	●	●		●	●		●	●			●	
Southwest Ocean Outfall Project San Francisco, CA		●	●		●			●	●	●				●	●	●	●		●	●				●	
Timber Export Facility Dupont, WA				●	●	●	●	●	●			●		●	●	●	●	●	●						
Coal Transshipment Terminal Superior, WI	●	●			●	●	●	●	●			●	●	●	●	●	●	●		●	●	●		●	
Coal Terminal Buffalo, NY	●			●	●	●	●	●				●	●	●	●		●	●	●						
Head of the Harbor Facilities Expansion Gloucester, MA	●			●	●	●	●	●	●			●	●	●	●	●	●	●		●	●				
Municipal Port Expansion Ponce, PR	●		●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●
Container Terminal Oakland, CA	●			●	●	●	●	●	●			●	●	●	●	●	●							●	
Hawaii Statewide Harbor System HI	●		●	●	●	●	●	●	●	●		●	●	●	●		●	●	●						
Bath Iron Works Pier Portland, ME			●	●	●	●	●	●				●	●	●	●		●	●							
Port Facility Expansion Grand Cayman	●		●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●		●	
Port Expansion Callao, Peru	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●
Port Development Toledo, OH	●	●		●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●
Brucutu Iron Ore Terminal Victoria, Brazil	●			●	●	●	●	●	●	●	●	●	●	●	●										
Fish Port Buenaventura, Colombia	●			●	●	●	●	●	●			●	●	●	●	●	●	●	●						

**PARSONS BRINCKERHOFF
MARINE PROJECT EXPERIENCE
(Continued)**

	Work Elements												Services												
	Upland Development	Demolition	Tie-in Existing Structures	Marginal Wharf and Bulkheads	Concrete Pier/Deck	Fendering	Docking Hardware	Utilities and Ship Services	Dredging, Filling and Disposal	Breakwater	Pier on Piles	Equipment	Condition Surveys	Site and Soil Investigations	Preliminary Design	Construction Planning	Cost Estimating	Operations and Equipment Review	Environmental Evaluation	Final Design and Contract Documents	Shop Drawing Review	Record Drawing Preparation	Construction Management	Construction Inspection	Procurement Assistance
Port of Erie Erie, PA	●	●	●	●	●	●	●	●	●		●		●	●	●	●	●	●	●	●	●				●
Waterfront Development Deer Island, MA	●	●		●	●	●	●	●	●		●		●	●	●	●	●	●	●						
Fish Pier Portland, ME	●	●	●	●	●	●	●	●	●		●		●	●	●	●	●	●	●	●	●	●			●
Naval Shipyard Dredging Portsmouth, NH	●			●	●	●	●		●				●	●	●		●	●	●	●	●	●			●
Port of Suez Rehabilitation and Expansion Suez, Egypt	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●		●	●		●	●	●
Westway New York, NY	●	●	●	●	●			●	●		●		●	●	●	●	●	●	●	●	●	●	●	●	●
Fort McHenry Tunnel Dredging Baltimore, MD				●					●					●	●	●	●	●		●	●	●			●
Graving Docks 1, 2, and 3 Groton, CT				●	●	●	●	●			●		●	●			●								
Sunshine Skyway Bridge St. Petersburg, FL			●		●	●									●	●				●		●	●		
Hampton Roads Bridge-Tunnel VA			●		●				●						●	●	●					●	●	●	
Heavy Lift Transport System Quonset Point, RI and Groton, CT	●	●	●	●	●	●	●	●	●		●		●	●	●	●	●	●	●	●	●	●		●	●
LNG Terminal Providence, RI	●	●	●		●	●	●	●	●				●	●	●		●	●	●	●					
Hoosac Pier Study Boston, MA	●					●	●	●			●		●	●	●		●								
Petroleum Marine Facilities Peru	●	●				●	●	●	●		●	●		●	●	●	●	●		●					
Lighterage Facilities Dar-es-Salaam, Tanzania		●	●	●	●	●	●	●	●		●	●		●			●								
Navy Homeport Facility Lake Charles, LA				●	●	●	●		●		●			●	●	●				●					
MWRA Shoreside Piers Boston, MA			●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●					

Castle Island Terminal

Boston, Massachusetts



Forty-ton container cranes at Castle Island Terminal, South Boston.

Parsons Brinckerhoff provided engineering and construction services to the Massachusetts Port Authority (MASSPORT) for the development of a modern container facility at the Castle Island Terminal in South Boston, across the harbor from Logan International Airport.

Container Facility Increases Volume at Boston Harbor

Castle Island, a 105-acre, multi-berth terminal owned and operated by MASSPORT, is the major terminal in the Port of Boston for the discharge of lumber, automobiles,



Construction of the reinforced concrete wharf deck for Castle Island Terminal.

general cargo, steel, and fuel oils. The terminal provides six marginal wharves, with water depth of 35 to 40 feet, supported by 101 acres of storage.

MASSPORT made an initial investment of \$18 million at Castle Island to convert two existing berths into a single-berth, two-crane facility with 1,000 feet of marginal wharf and 10 acres of paved storage for chassis-mounted containers. The Castle Island Terminal is the first major seaport development project in Boston Harbor in the last decade. It will increase cargo capacity at the Port of Boston by nearly 20,000 containers per year to accommodate the increased volume expected in the 1980's.

The firm's specific responsibilities on this fast-track project included design and construction supervision services associated with the following:

- Surface, subsurface, underwharf and underwater condition survey.
- Rehabilitation and upgrading of the existing timber wharf structure with a reinforced concrete deck and pile caps.
- Widening of the existing deck.
- Construction of crane rail foundations to support container crane runway.
- Extension of existing cargo and bunkering petroleum pipes.
- Construction of utilities, electrical distribution system, and ship services.
- Construction of paved storage area for containers.
- Complete construction management and inspection services.



Reinforced concrete wharf dock under construction.



Single berth, two-crane facility at Castle Island Terminal.

Castle Island Terminal

Head of the Harbor Fish Pier

Gloucester, Massachusetts

For the Massachusetts Government Land Bank and the Gloucester Redevelopment Authority, Parsons Brinckerhoff prepared the final design, contract documents and specifications, and provided onsite construction management for berthing and commercial fish processing facilities at Head of the Harbor in the inner harbor at Gloucester, Massachusetts.

The project included:

- Dredging of the inner harbor
- Addition of 0.9 acre of reclaimed land created with dredged fill

material

- Construction of a containment dike
- Construction of two marginal wharves
- Extension of two existing storm drains

Processing Facilities Provide Support for Fish Export Trade

The Gloucester Harbor, an important site of export trade, handles

more than 250,000 tons of frozen fish annually. The Head of the Harbor site, however, was a run-down and blighted waterfront area, and the fish pier project is part of a major facelift. Adding the needed berthing and fish processing facilities enhances the area's overall appearance, and provides support for export activities.

Fish Processing Center Site

A 3.8-acre site was created for the fish processing center by using dredged fill material to add 0.9



Marginal wharves flank both sides of channel dredged for off-loading facilities of four fish processing plants.

acre of reclaimed land to the existing site.

A riprap containment dike formed the retaining structure for the additional fill. Two 31-foot-wide reinforced concrete marginal wharves, totaling 700 feet in length, were constructed along the containment dike. Two existing storm drains were extended to outfall beyond the containment dike structure.

The wharves were designed to support fully loaded trailer trucks, cranes, and a variety of fish off-loading equipment. One fish processing plant is under construction and three more will be built adjacent to the wharves.

A public park was constructed between the two wharves and landscaped with scattered stone, shrubs, timber pile posts with rope rails, and stone dust paths.

Harbor Dredged

The inner harbor was dredged in front of the wharves to provide a 15-foot minimum depth of water at low tide, which is adequate for the largest fishing vessels in the Gloucester fleet.

Parsons Brinckerhoff also designed temporary emergency repairs for the contiguous wharf on the State Fish Pier, beyond the recently constructed freezer/cold storage facility.



Waterfront improvements included constructing a public park between two wharves.

Head of the Harbor Fish Pier



Container Cargo Terminals Seatrain Lines, Inc.

Parsons Brinckerhoff has provided a wide range of consulting engineering services at three facilities of Seatrain Lines, Inc.

Weehawken, New Jersey: The firm provided preliminary planning and evaluation of existing marine structures on an 80-acre waterfront site containing six finger piers in Weehawken, New Jersey.

Studies were made to determine the cost of developing the site as a container-cargo facility, utilizing the existing structures where possible. After preliminary work was completed, Seatrain Lines retained the firm to develop final design drawings, specifications, cost estimates, and contract documents for an entirely new pier, approximately 120 feet wide and

960 feet long, and to perform resident inspection of construction.

**Design and
Construction
Management Services
Provided for
Award-Winning
Terminal**



Because Seatrain Lines wanted the pier constructed in time to receive the first of their newly constructed ships, it was necessary to select the contractor and start construction before all the design work was completed. This was accomplished by receiving bids based on preliminary designs and plans. After selection of the contractor, Parsons Brinckerhoff's designers worked with the contractor to produce a design that best conformed to his equipment and planned method of construction. Work of the pier contractor was coordinated with that of the container crane erector for maximum efficiency. The work was completed in 1969, in time to receive the new containership.

The design received the American Concrete Institute Award of Merit for 1970 as one of the outstanding concrete structures built in 1969 in New Jersey.

After the completion of the pier and upland facilities, the firm prepared documents for the receipt of dredging permits and provided technical inspection of the dredging operations.

Oakland, California. Parsons Brinckerhoff supervised the preliminary surveys and soils exploration program, and provided technical inspection of construction and general consultation services for this facility designed and constructed by Pomeroy/Gerwick

of San Francisco on the site of a former World War II shipyard. This work was performed in two phases: wharf construction and erection of two container cranes, and development of the upland area. Both phases have been completed.

Honolulu, Hawaii. The firm provided engineering services including technical inspection of fabrication and erection of container cranes at this new facility provided by the State of Hawaii. Wharf construction by the state and erection of the two container cranes have been completed.

Container Cargo Terminals

Expansion of Port Facilities

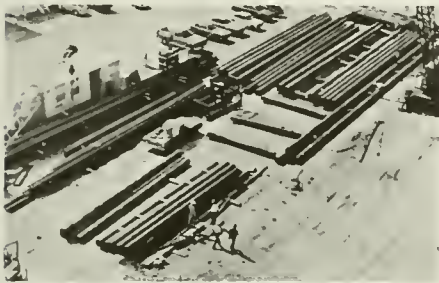
Port of Ponce, Puerto Rico

Parsons Brinckerhoff, in joint venture with a Puerto Rican engineering firm, designed a major expansion of municipal port facilities in Ponce, Puerto Rico, the island's second largest port.

The project provided paved upland area, drainage, utilities, and miscellaneous facilities for two new berths, handling containerized cargo, breakbulk general cargo, and heavy lift cargo.



Construction of container wharf during port expansion.

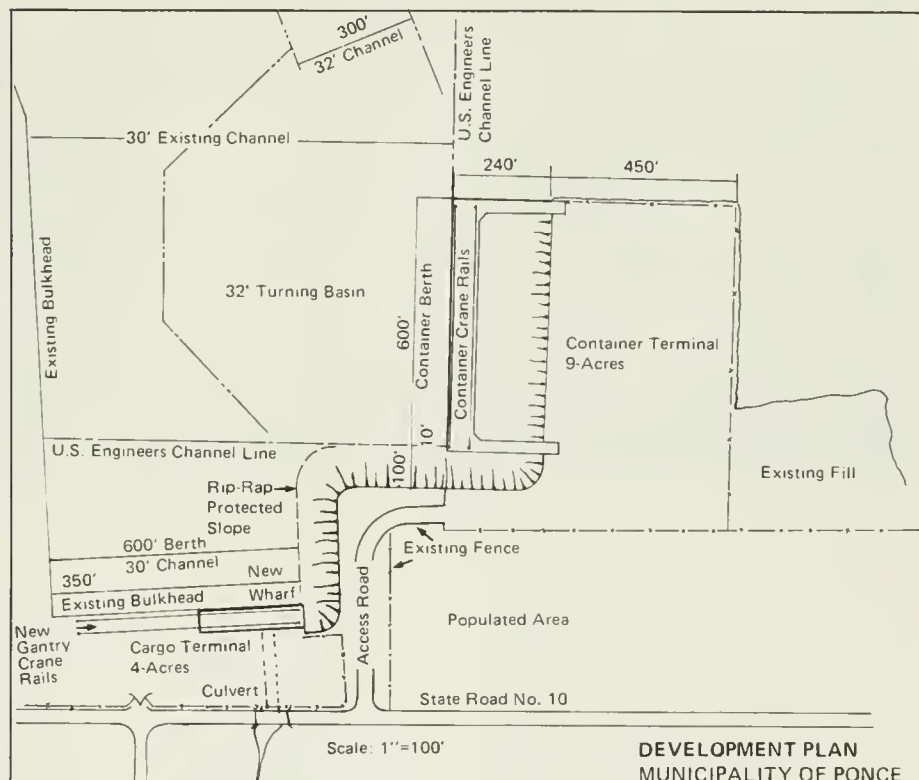


Foundations, at an existing bulkhead, under construction for the heavy lift gantry crane at the general cargo berth.

Unique features of the design were crane support foundations installed behind an existing bulkhead and the deepening of the dredged basin in front of the bulkhead. Approach trestles enabled the container berth to be constructed at a more reasonable cost than usual construction methods involving contiguous land areas and berth structures.

Unique Design Adds Two Berths in Port Expansion

Preparatory to this work, a preliminary engineering study and report had highlighted the problems involved in the project and had presented alternative solutions. This



val by the Puerto Rico Planning Board and by the Economic Development Administration of the U.S. Department of Commerce which provided funds to implement the expansion.

tract documents for the project were prepared jointly by the firms working in New York and San Juan. Close coordination and cooperation between the two firms expedited completion of the work.

Jourdan Road Terminal

New Orleans, Louisiana

Parsons Brinckerhoff has had an ongoing involvement in the development of the Jourdan Road Terminal in New Orleans, Louisiana. The general cargo facility was designed by the firm after resolving a construction problem resulting from poor soil conditions. The firm also developed the terminal's railroad and utility plans.

Innovative Design Solves Soil Problem and Reduces Cost

The Port of New Orleans' development plan for the Jourdan Road Terminal included construction of nine berths along the Mississippi River-Gulf Outlet and one berth along the inner harbor navigation canal for the handling of general and containerized cargos.



Stone column installation

When Parsons Brinckerhoff prepared alternative designs for the proposed terminal, one of the



Berths 4 and 5 take shape at Jourdan Road Terminal

firm's first tasks was a geotechnical investigation which revealed the existence of very poor soil conditions at the site. Since a staged construction plan would be used in the development, geotechnical engineering studies were concentrated on the first stage of development—construction of berths 4 and 5.

Fourteen alternatives were investigated for the proposed wharf structure, including a conventional pile-supported platform. Factors

related to construction, operation, and relative cost were considered in the selection process.

The selected and most economical scheme provided a stone column-reinforced earth embankment adjoining a narrow pile-supported platform. Stone columns were introduced in the ground using the vibroreplacement technique. A hole, jetted in the ground to the top of the sand-bearing stratum, then was backfilled with stone

compacted by a combination of impact and vibration. The compaction process resulted in the buildup of stone columns up to 4 feet in diameter. An earth embankment faced with precast concrete panels and reinforced with steel strips was constructed on top of the stone columns. This embankment allowed transfer of superimposed loads to the stone columns by arching over the in situ soil.

The effectiveness of the stone column-reinforced earth system was investigated through a full-scale field test that modeled the actual wharf design. The test results were used to optimize the design and realize additional cost savings.

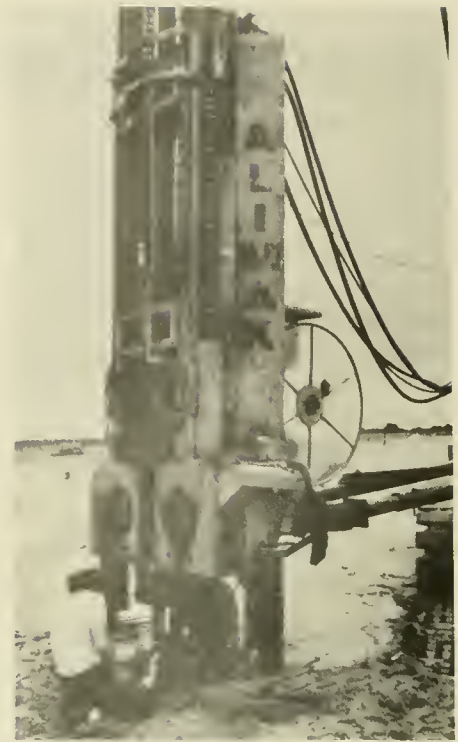
The construction monitoring data confirmed that the stone columns improved the soft in situ soils by providing lateral stability, higher load-carrying capacity, reduced settlements, and accelerated rate of consolidation.

The terminal storage areas were designed for staged development with vertical drains and surcharging recommended for those areas needed for immediate use. Prefabricated wick drains were successfully used in those areas. Construction instrumentation data confirmed that the wick drains effectively accelerated consolidation of the subsoils. A second storage area planned for future use was preloaded without the use of wick drains.

Parsons Brinckerhoff designed the entire terminal drainage system for incorporation into the existing and planned areawide drainage system. Open ditches, buried drain lines, and pumping stations were provided.

Terminal lighting, sewerage, roadways, and railroad trackage were planned for the initial development and for the overall development. The initial development included a transit shed of 140,000-square-foot overall area protected by a combined wet-pipe standpipe and automatic sprinkler system.

The use of ground treatment techniques at the Jourdan Road Terminal resulted in substantial immediate and long-term economical benefits. The estimated saving in the construction cost using this design as compared to a conventional pile-supported platform was \$1.25 million for the initial development plan. Substantial savings can be realized if this design is applied to the remaining berths in the ultimate development plan.



Installing wick drains

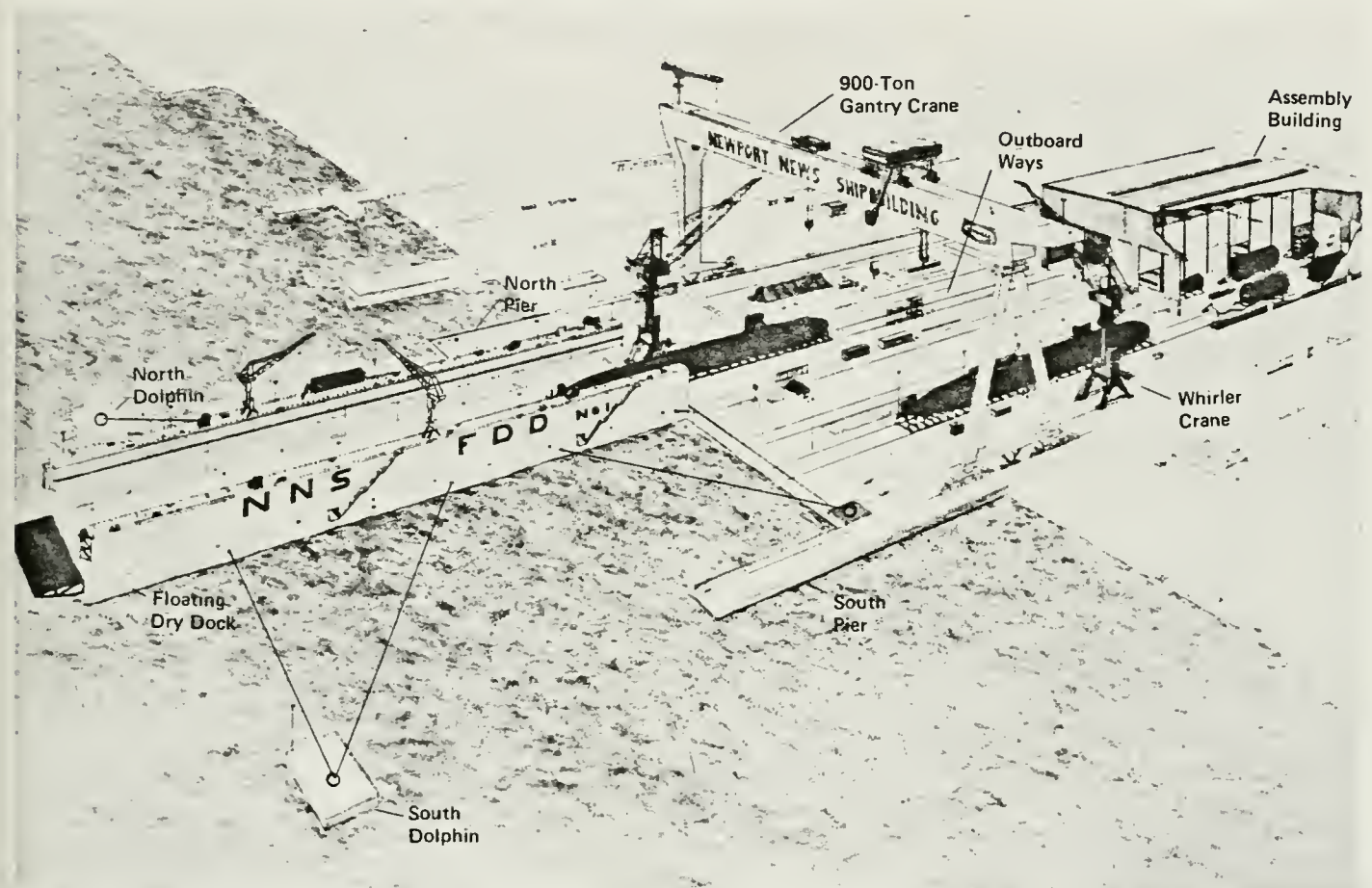


Construction of the reinforced earth embankment

Jourdan Road Terminal

Land Level Ship Construction Facility

Newport News, Virginia



Rendering of innovative land-level shipbuilding facility shows a submarine under construction.

Parsons Brinckerhoff designed a state-of-the-art land-level ship construction facility for Newport News Shipbuilding, Newport News, Virginia, to replace outdated inclined shipways built in 1917-18. Using modular construction methods, the facility permits construction of a full range of ships up through "panamax" — the largest vessel capable of passing through the Panama Canal.

Shipbuilding in the mid-twentieth century has been reshaped by the concept of modular construction. Vessel construction occurs at land level (rather than on a traditional inclined shipway which serves both

as construction site and launch-way), and several ships may be under construction simultaneously without obstructing the launching process. In the flexible modular method, hull sections, or modules, can be fabricated individually and in any order, moved to convenient work areas for outfitting with control and life-support systems, and then joined together when each module has been outfitted.

The flexible land-level facility allows diversity of product and efficient scheduling of materials movement. As ships are readied for launch, a floating dry dock is positioned at the appropriate

launching way to serve as the launch platform. Between launches, the dry dock can be used for ship repair.

State-of-the-Art Shipbuilding Facility Designed by Firm

Parsons Brinckerhoff evaluated several alternative land-level schemes. The recommended ultimate layout includes:

- A 120,000-square-foot, two-bay (four building ways) assembly building with bridge cranes and a central core of office and support areas.

- Two 50-ton whirler cranes serving a four-way open outfitting area outside the assembly building.
- A mobile floating dry dock.
- A 900-ton gantry crane.

Parsons Brinckerhoff provided a phased cost estimate for the \$300 million facility. To make phased construction practical, Parsons Brinckerhoff designed the foundations and facility systems with the final scale in mind. Provision was made from the beginning for foundations that would not be fully utilized until later phases, thus avoiding future reconstruction and disruption to shipbuilding activities. The dimensions and capacities of Phase I structures and systems were carefully evaluated to uncover hidden problems and restrictions that would arise when heavier and bulkier vessels are constructed in the future.

Moving the massive, yet fragile, modules requires a transfer system that combines the power of heavy industry with the precision of high technology. The modules must be moved from position to position throughout the various stages of fabrication and outfitting, and then joined precisely. The

transfer system also must be capable of moving the massive assembled vessel to the riverfront bulkhead and there effecting a smooth transfer from land to the floating dry dock used as the launching platform.

To design a transfer system with the required precision and bearing capacity and capable of making a smooth transfer to the dry dock, Parsons Brinckerhoff maintained close contact with the dry dock designer and considered various feasible transfer systems.

To serve both present and future needs, the firm considered several flush yard concepts which facilitate vehicular and personnel circulation without depressed or elevated transfer ways. The firm evaluated air and water skate systems, pneumatic-tired transporters, walking beams, and wheel and roller systems. After eliminating those systems inadequate for the largest anticipated loads or requiring overly critical maintenance, the most attractive transfer systems were found to be those using either wheels, rollers, or a wheel/roller combination.

In a wheeled transfer system, four-wheeled electric motor-driven or externally propelled cars travel on rails and carry the cradles on which

the hull modules rest. Hydraulic jacks provide various adjustments — roll, pitch, yaw, lateral, vertical, fore, and aft — for precise alignment of modules during welding. The same cars move the assembled vessel onto the dry dock and are removed before a launch.

In a roller system, individual rollers or roller cages run on permanent roller plates in troughs or on recyclable roller pads. Once the modules are transferred to their assembly locations, portable positioning jacks provide adjustment to align the modules for welding. After final assembly, the vessel is moved onto the dry dock on the rollers, which remain in place during the launching.

The movement of materials, like the movement of the modules themselves, becomes flexible in the planned facility. Much of the outfitting can be accomplished concurrently with hull structure fabrication. Outfitting and construction crews need not compete for work space, as they do on the traditional inclined shipway. The short, open-ended modules give workers better access to the ship's interior and allow the use of varied equipment suited to each task.

Land Level Ship Construction Facility

Copley Place Site Development Project

Boston, Massachusetts



Model of Copley Place.

Parsons Brinckerhoff is providing professional services to a Chicago developer for the design and construction of Copley Place, a multi-use complex to be built on air rights over the Massachusetts Turnpike at Copley Square in Boston. The 10-acre site is currently occupied by the exit ramps from the turnpike and by the Back Bay Station.

Development of the site will require covering portions of the

turnpike and the relocation and modification of the existing turnpike ramps. The \$300 million complex will include a 750-room deluxe hotel; a 1000-room convention center/hotel; a retail mall featuring specialty stores, restaurants, and theaters; an office complex; housing units; and underground parking facilities.

Parsons Brinckerhoff is responsible for the preliminary and final design of all site development work. This

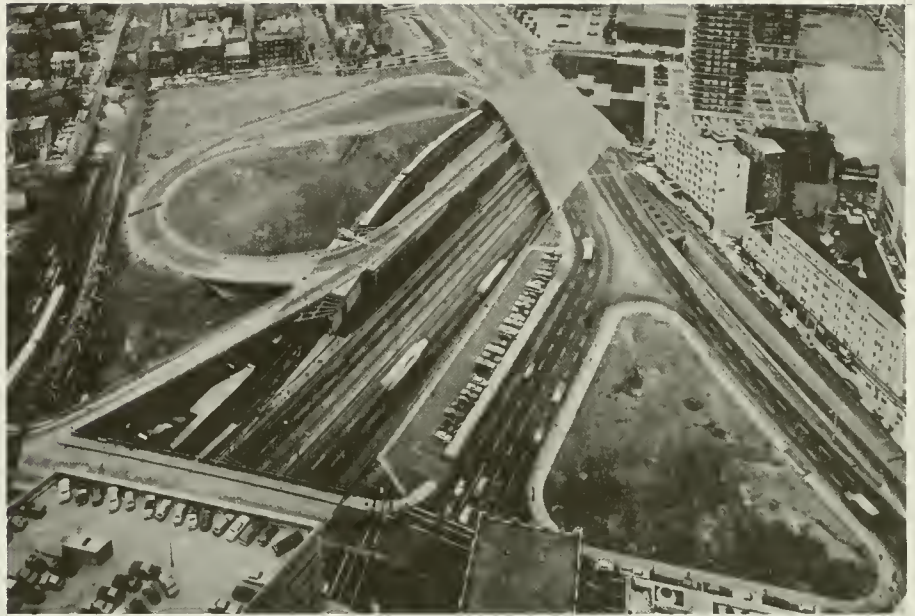
includes improvements to the street system surrounding the complex, utility relocations, and civil and structural design of the relocated turnpike ramps and service ramps, as well as access roadways to the parking garages and main entrances to the hotels.

In addition, the firm performed traffic analyses and conducted field surveys and parking garage demand profiles. Parsons Brinckerhoff is also responsible for developing

traffic maintenance plans during construction for both turnpike and city street traffic. The firm has also completed preliminary investigations of alternative ventilation systems for the covered portion of the turnpike ramps, and the railroad station under the planned complex.

Complex Requires Building Over a Turnpike and Relocating Ramps

Construction of the complex started in mid-November 1980 and is expected to stretch over a period of four years. Parsons Brinckerhoff will continue to provide engineering services, including resident engineering, during the construction phase of the project.



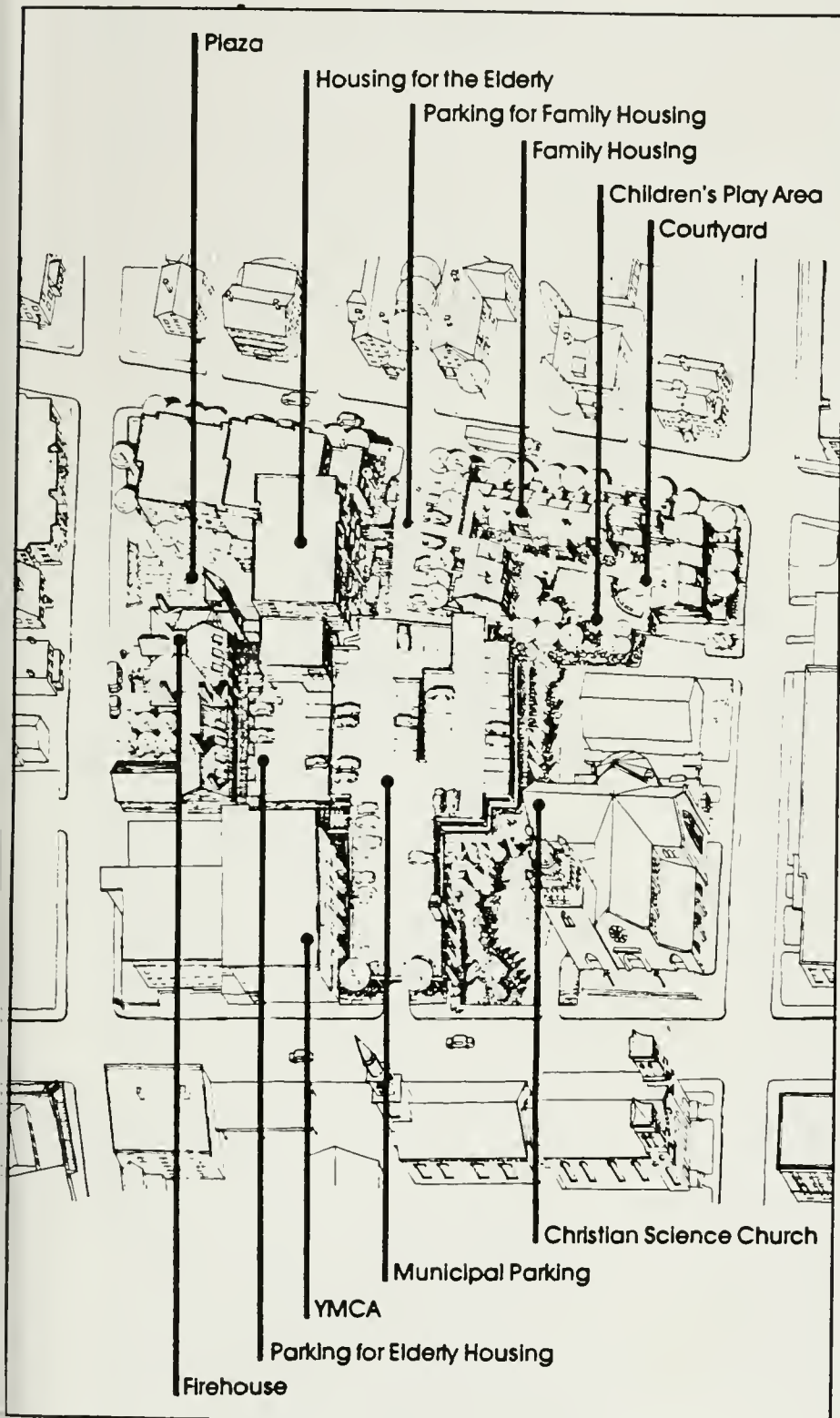
Aerial view of the Copley Square area, showing turnpike and ramps.

When completed, Copley Place is expected to be the focus of many local and tourist activities. The Back Bay railroad station, part of which will be covered by the

complex, will soon be reconstructed as part of the Massachusetts Bay Transportation Authority's Southwest Corridor Project.

Firehouse Block Project

Concord, New Hampshire



In Concord, Parsons Brinckerhoff has designed a major mixed-use redevelopment project located one block west of the central business district and one block south of the state capitol. The project consists of four principal elements:

- Conversion of the existing turn-of-the-century fire station to combined community service center and residential uses.
- A six-story, 68-unit housing building for the elderly.
- A cluster of 15 townhouses for moderate income families.
- A municipal garage for 220 cars, replacing existing surface parking on the site.

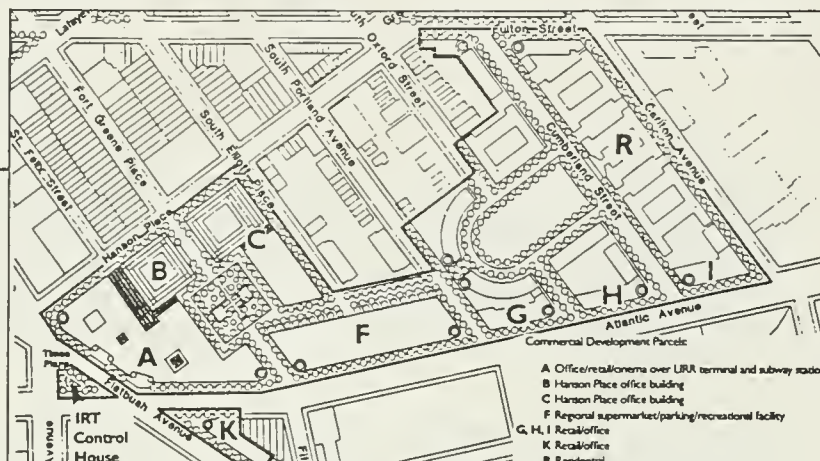
Old Firehouse Is Focus of Redevelopment Project In Downtown Area

Because of its proximity to downtown, its significance within the local "Neighborhood Strategy Area," and the nature of adjoining residential districts, the project is vital to Concord's orderly growth and revitalization. Parsons Brinckerhoff worked closely with neighborhood residents, abutters, the downtown redevelopment corporation, municipal and state agencies, and HUD to solicit a full range of viewpoints. In some cases perspectives varied widely, and the firm, in conjunction with local officials, succeeded in achieving acceptable compromises between parties. This process was central to the design and,



Atlantic Terminal/Brooklyn Center – Traffic, Transportation, Environmental Studies

Brooklyn, New York



Client

- New York City Public Development Corporation (PDC) and Rose Associates, developers

Background

- Project's location is at the major entry to downtown Brooklyn and its development is considered vital for Brooklyn's resurgence.
- Site is located atop the Long Island Rail Road's Brooklyn terminal and ten subway lines, and is served by 11 bus routes — the most extensive public transportation coverage in Brooklyn.
- Area is characterized by substantial traffic/pedestrian activity and congestion.
- Since several other projects have also been proposed for Brooklyn's downtown area, vehicular, pedestrian, and mass transit load levels were expected to increase significantly, resulting in further deterioration of existing conditions and even more congestion.

Scope of Project

- Proposed projects would be developed in two phases
 - Phase 1 (completion in 1988) — Atlantic Terminal — 2.8 million square feet of commercial space for offices, retail stores, a cinema, supermarket, health club, 1,000-car parking garage, and 643 dwelling units.
 - Phase 2 (completion in 1991) — Brooklyn Center — an 11-story building with 1.85 million square feet of commercial space for offices, retail stores, and up to 820 parking spaces.

Parsons Brinckerhoff Role

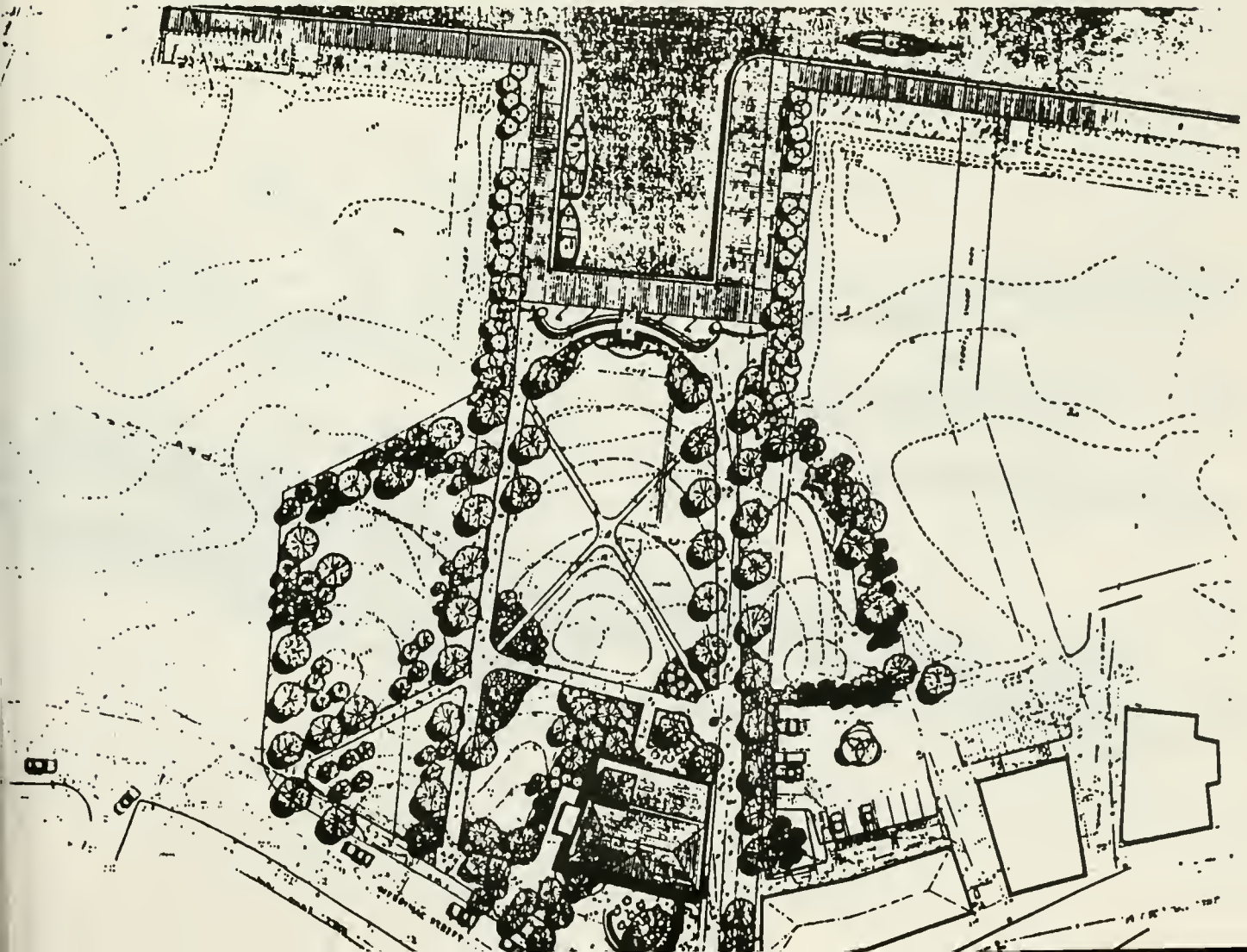
- Parsons Brinckerhoff (PB) worked with other consultants in refining a master plan and preparing the draft and final environmental impact statements.
- PB conducted the traffic and transportation studies which included:
 - Evaluating traffic conditions in the impact area
 - Analyzing pedestrian flow conditions on sidewalks and within the Atlantic Terminal station complex
 - Recommending traffic and transit improvements to mitigate problems, including street widening, channelization, signal system modifications, parking restrictions and enforcement, contraflow operations, subway stairwell widening, turnstile configuration and passageway modifications (including conformance with overall station modernization plans), and conceptualization of additional passageways to connect transit lines to relieve station overcrowding
- Analyzed the impacts of on-site and traffic noise, and made recommendations for needed improvements and mitigations.
- Analyzed the impact of a proposed cogeneration facility on the area's air quality.
- Coordinated studies with other proposed Brooklyn development projects to ensure adequate traffic management for the overall area. PB's transportation recommendations were incorporated into a comprehensive plan for traffic management in downtown Brooklyn.

MARKET LANDING PARK

Newburyport, Massachusetts

Market Landing Park was developed as the central public open space linking downtown Newburyport and the historic waterfront. The park will also provide the focus for a new hotel and condominium development. Park designs were prepared by The Halvorson Company in collaboration with the Newburyport Redevelopment Authority and Steffian Bradley Associates, Inc., architects for the hotel and condominium development.

The park provides a passive open space which creates a physical and visual link with the neighboring downtown shopping districts and affords a generous civic gathering area. The design responds to and supports the unique federal style of the surrounding architecture and insures that the charm and character of this historic port city is maintained.

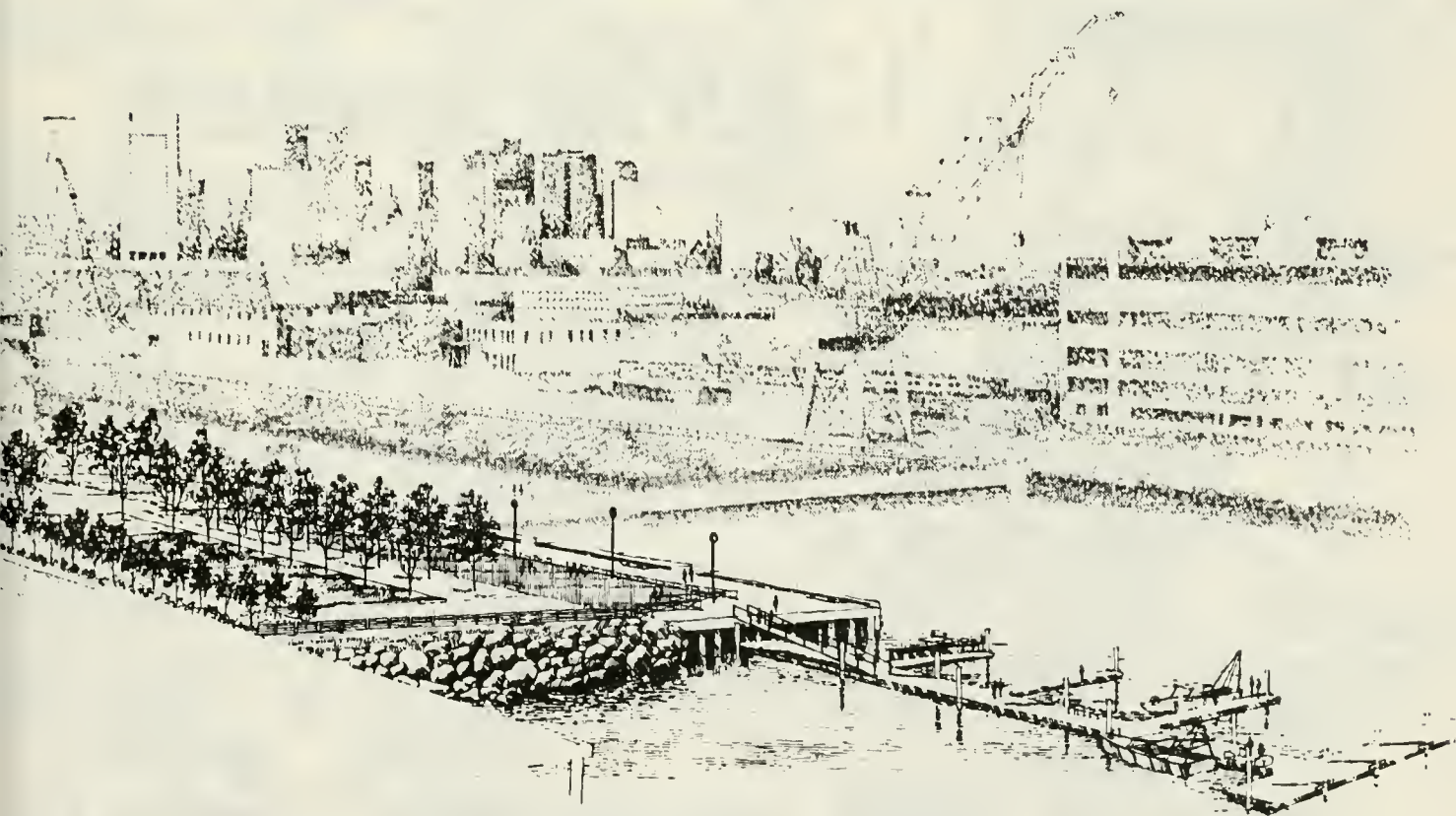


COASTAL CEMENT PARK

Boston, Massachusetts

Coastal Cement Park is the primary pedestrian open space for the rapidly expanding Marine Industrial Park being developed by the Economic Development Industrial Corporation (EDIC). EDIC leases individual development parcels to private developers with the stipulation that along with each facility being privately developed, an amenity be made available for public use and enjoyment. Cementos Del Norte, a Spanish consortium, donated Coastal Cement Park to the public in exchange for the rights to develop a storage facility for dry cement being shipped from Europe. The park has been successfully completed and compliments the strong geometric forms of the storage silos.

This project has just recently received the Top Honor Award in the 1988 "Excellence On The Waterfront" competition sponsored by the Waterfront Center of Washington, D.C. This award applauds the compatibility of a working waterfront, an industrial facility, and a park. The Boston Society of Architects also highlighted the achievements of Coastal Cement Park in presenting a design award to EDIC for the development of the Marine Industrial Park.

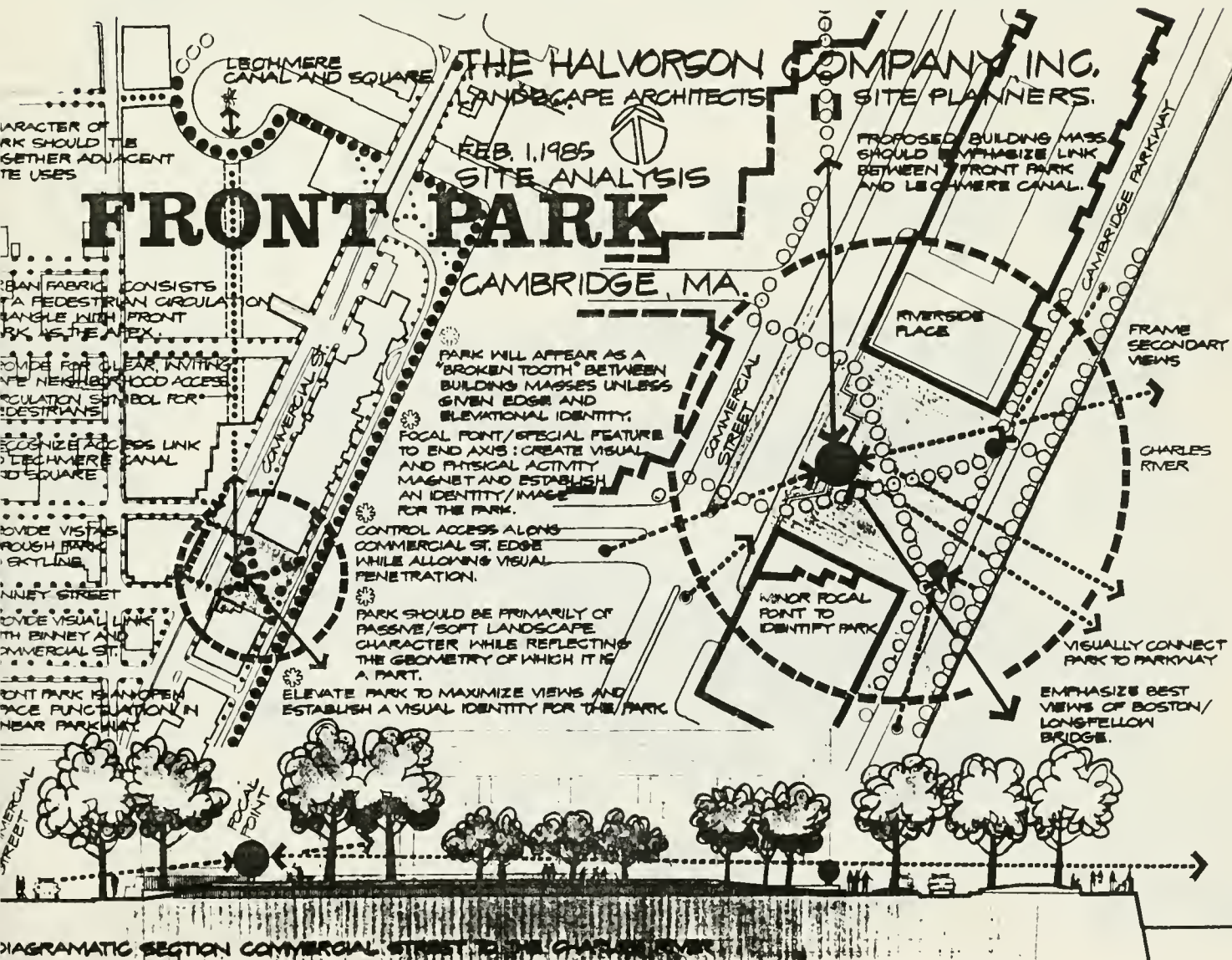


FRONT PARK

Cambridge, Massachusetts

"The Front" along the Charles River was originally conceived by Charles Eliot as an important element within his East Cambridge Waterfront Plan. Although never implemented, Eliot's park concept was reborn, in part, as Front Park in the City of Cambridge's East Cambridge Riverfront Plan of 1978.

The park has become a pivotal element in the open space network of the East Cambridge Riverfront. Front Park is designed to be a simple, yet elegant gateway from the emerging technical and commercial districts and the existing residential neighborhoods, to the Charles River. With its completion in 1987, it has provided an important public open space for a revitalizing East Cambridge.

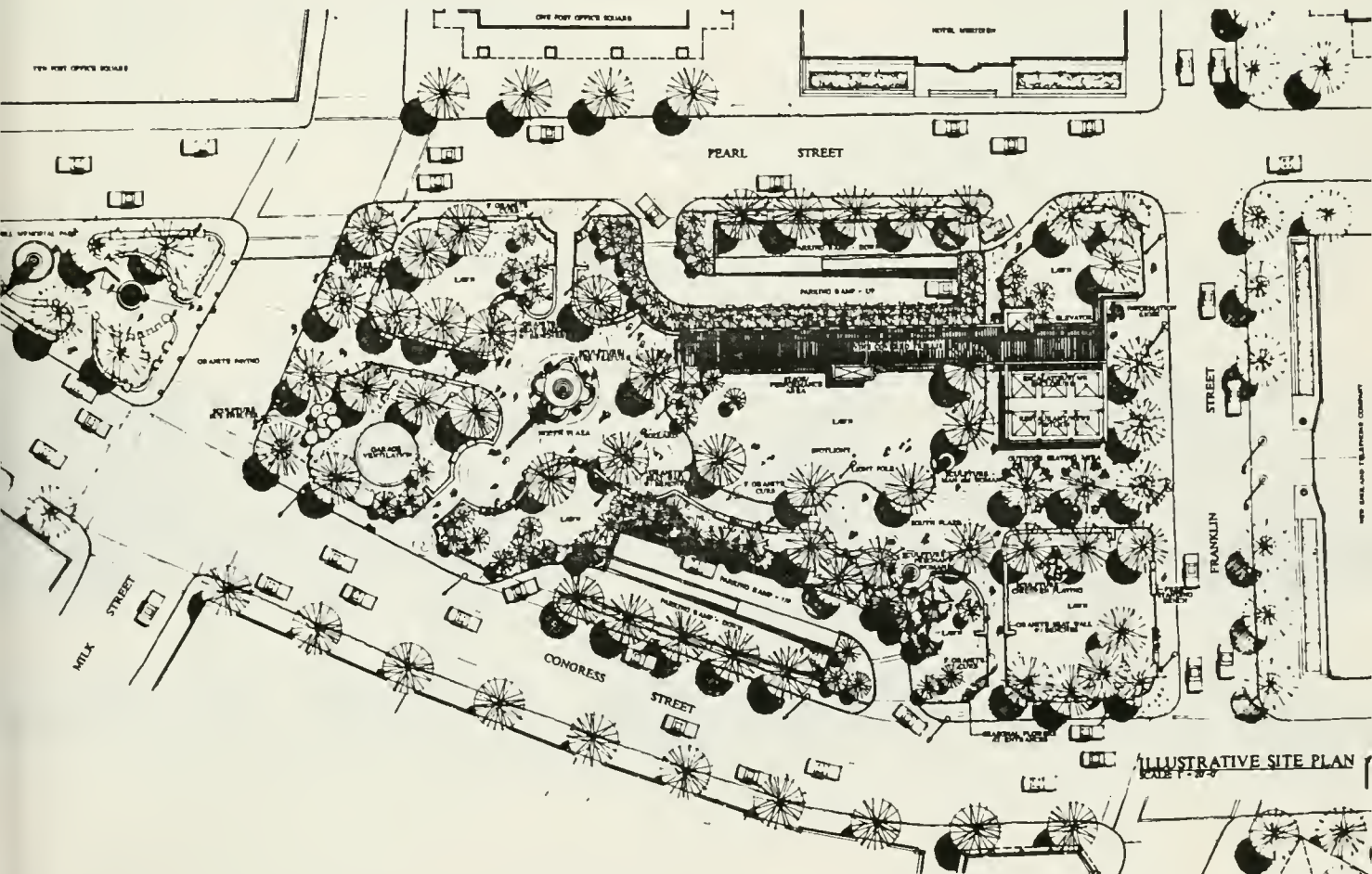


POST OFFICE SQUARE PARK

Boston, Massachusetts

The Halvorson Company, Inc. has been selected, by national competition, as the designer of this 1.7 acre park in the heart of Boston's financial district. This new downtown open space will be at street level over a 7 story below-grade parking garage.

The Halvorson Company design combines, in delicate balance, the intense and festive urban character of the downtown with tranquility and refuge. The park is designed to be rich in detail and visual interest, recognizing and reflecting the area's architectural heritage. The predominance of lawns and vegetation provides welcome relief and contrast to the dense urban fabric surrounding the park. A plaza at each end of the park provides the settings for major park focal elements of a fountain and sculpture which will draw people into the space. A garden pavilion overlooking the South Plaza incorporates pedestrian access to the underground garage, a cafe, and a newsstand.

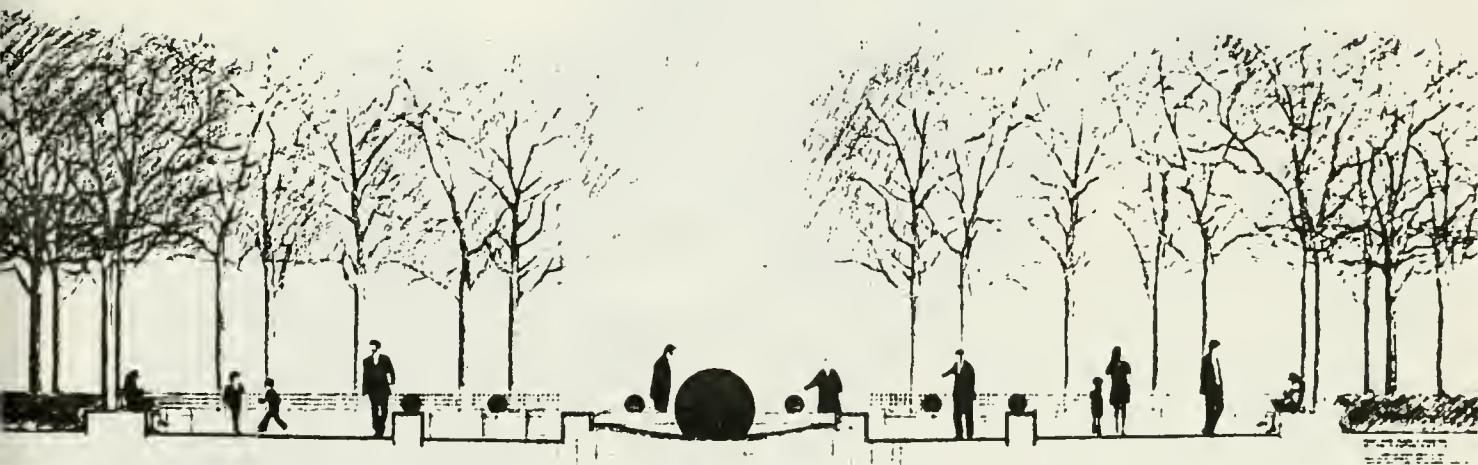


POINT PARK
Cambridge, Massachusetts

Point Park constitutes the final phase of the major Main Street development for Kendall Square in Cambridge. Working with the architecture and urban design firm of Monacelli Associates, The Halvorson Company, Inc. is developing the landscape design for this park which will serve both as a gateway into Cambridge from Boston and as a crossroads between the academic community of the Massachusetts Institute of Technology and the rapidly developing high-technology research and development community of Kendall Square.

A primary unifying element of the park's design is a sculpture intended to strengthen these two primary park functions: the park as gateway and the park as the center of an important and expanding high-technology community.

As one of the area's major public open spaces, the park will be a welcome pedestrian amenity amidst major commuter and service traffic routes.



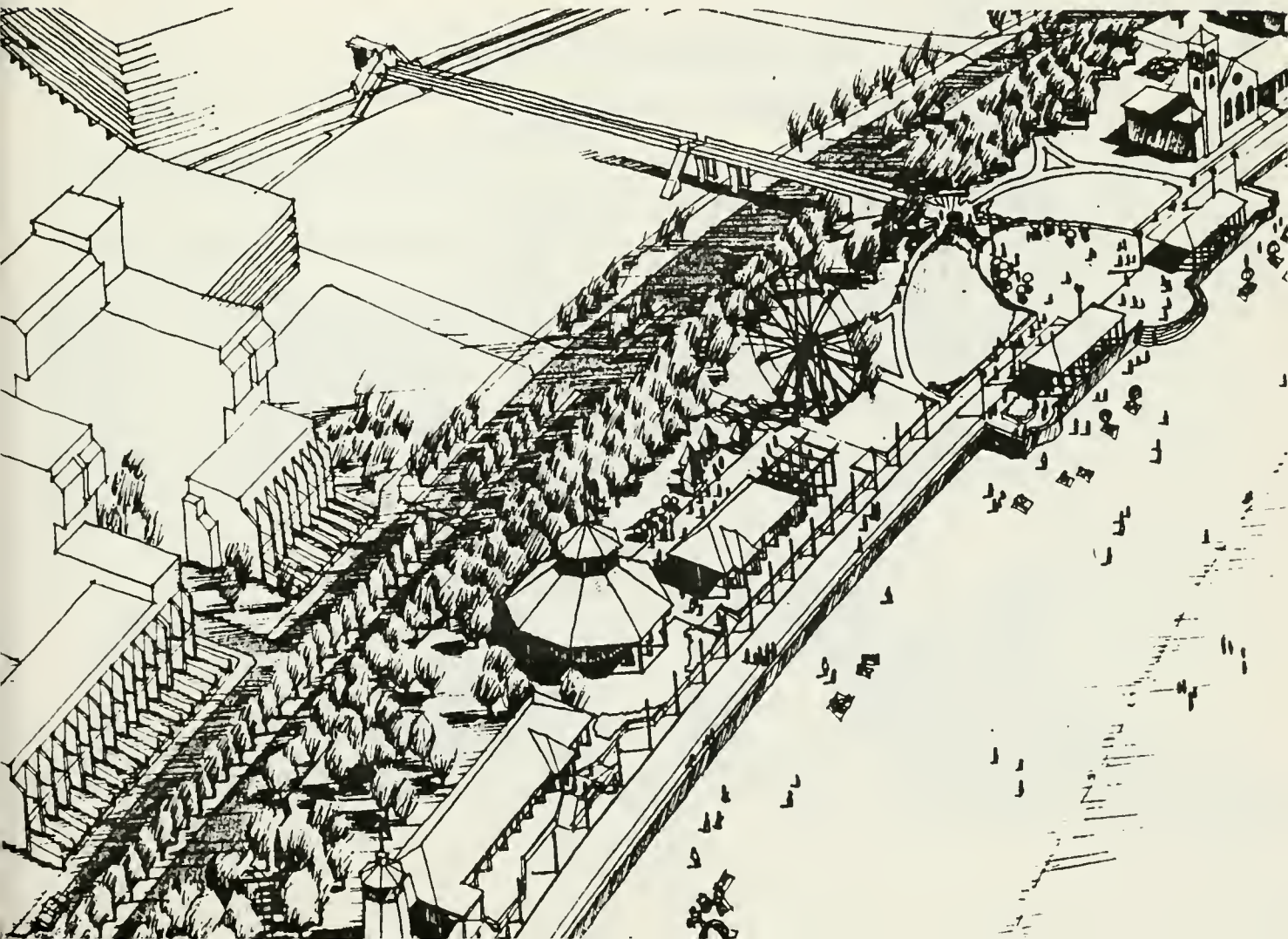
REVERE BEACH RESERVATION PARK DEVELOPMENT MASTER PLAN AND PHASE ONE*

Revere, Massachusetts

The master plan for historic Revere Beach establishes planning and design guidelines for fifty acres of natural parkland, promenades, amusements, and food and sanitary facilities along three miles of beach front. It received the 1981 American Society of Landscape Architect's Honor Award for Planning and Analysis.

The completed Phase One Development provides a landscaped park and viewing terrace as the entrance to the historic bandstand area.

*Craig Halvorson was project manager and principal designer for both projects prior to establishing The Halvorson Company.

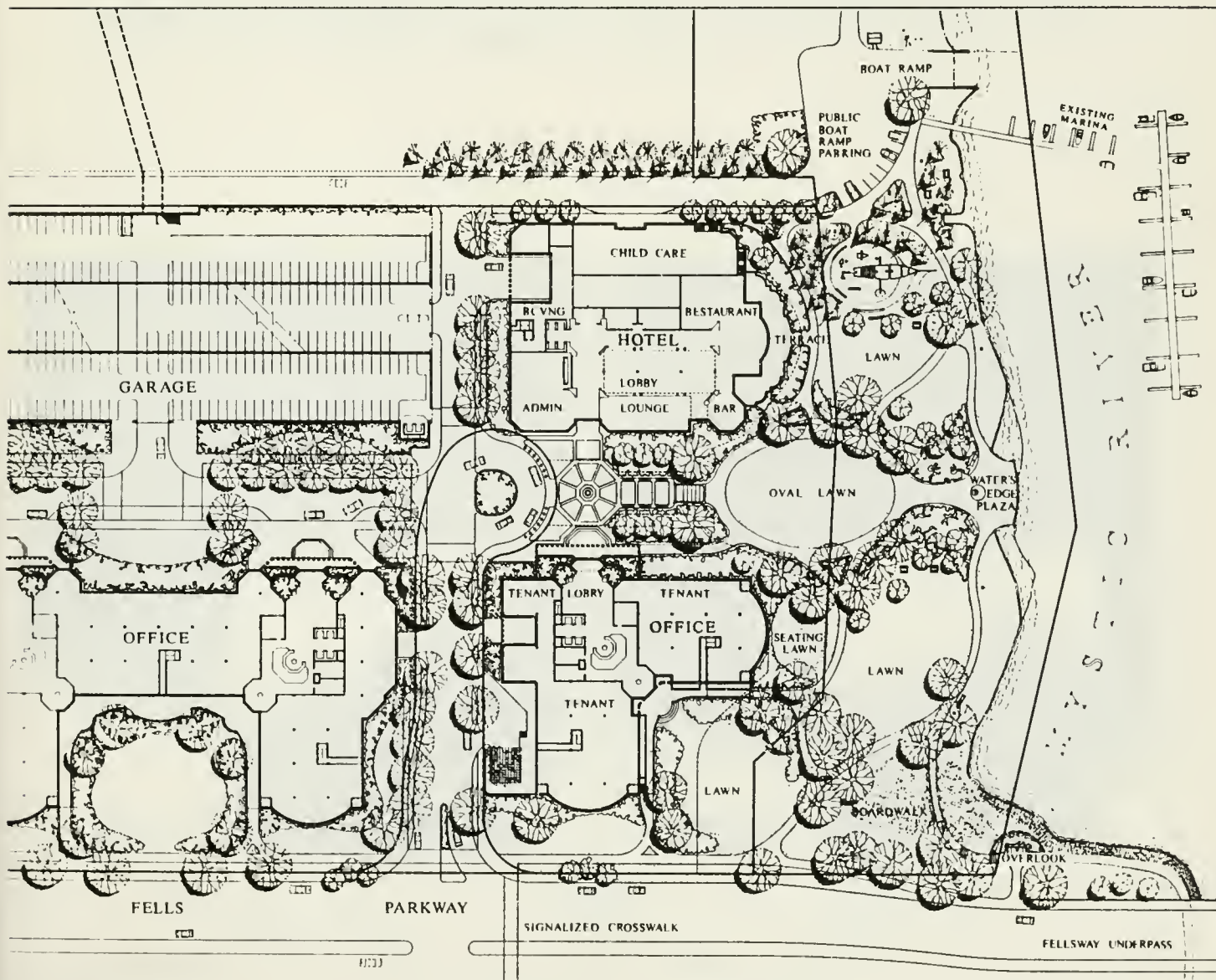


MYSTIC CENTER DEVELOPMENT

Medford, Massachusetts

The Halvorson Company, Inc., prepared a landscape design solution for the 16 acre office building and park site located at the intersection of routes 16 and 28 in Medford, Massachusetts.

The Mystic Center Development Plan connects the private development of offices, a hotel and restaurant, and a regional parking structure with the public uses of a Metropolitan District Commission park and boat ramp. The design's central axis and oval lawn join the architecture's classically inspired forms with a traditionally informal New England park landscape in a way which encourages a casual flow of people throughout the site.





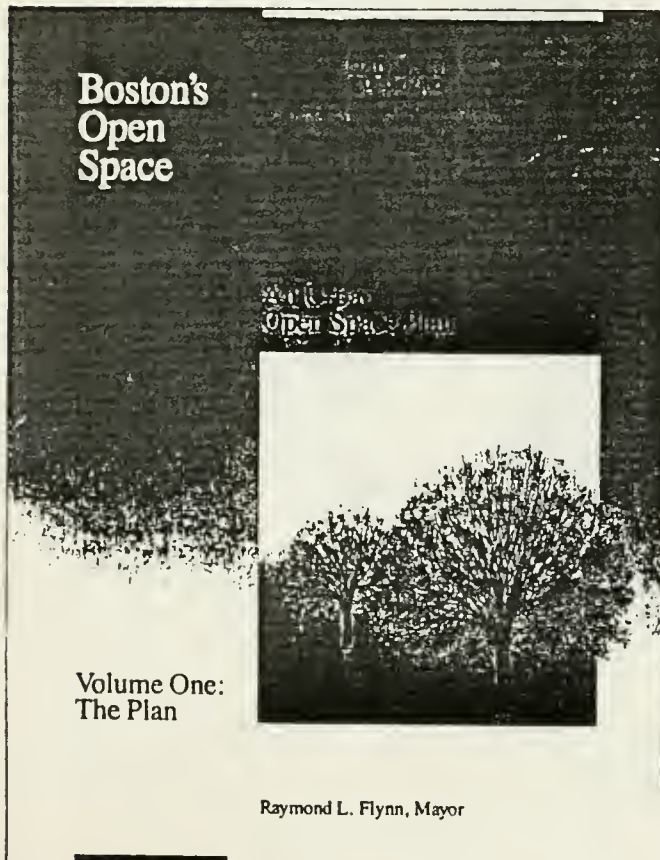
CITY OF BOSTON OPEN SPACE PLAN: INVENTORY AND CONDITION ASSESSMENT

Boston, Massachusetts

Mayor's Office of Capital Planning

The Halvorson Company, Inc. conducted, for the Mayor's Office of Capital Planning, a comprehensive survey and evaluation of 240 City of Boston parks, squares, malls and urban wilds which comprises Volume II of Boston's Open Space Plan. This work represents the first time Boston's parklands have been studied and evaluated, system-wide, in such depth and detail. The plan has been heralded as a model urban plan and will be an invaluable tool as Boston continues to restore, maintain and design new open spaces.

The firm developed a survey matrix that permitted the efficient collection of information pertaining to physical site conditions and to design and maintenance considerations. Evaluations were written for each site, and open space summaries written for each of Boston's 16 neighborhoods and for the system as a whole.

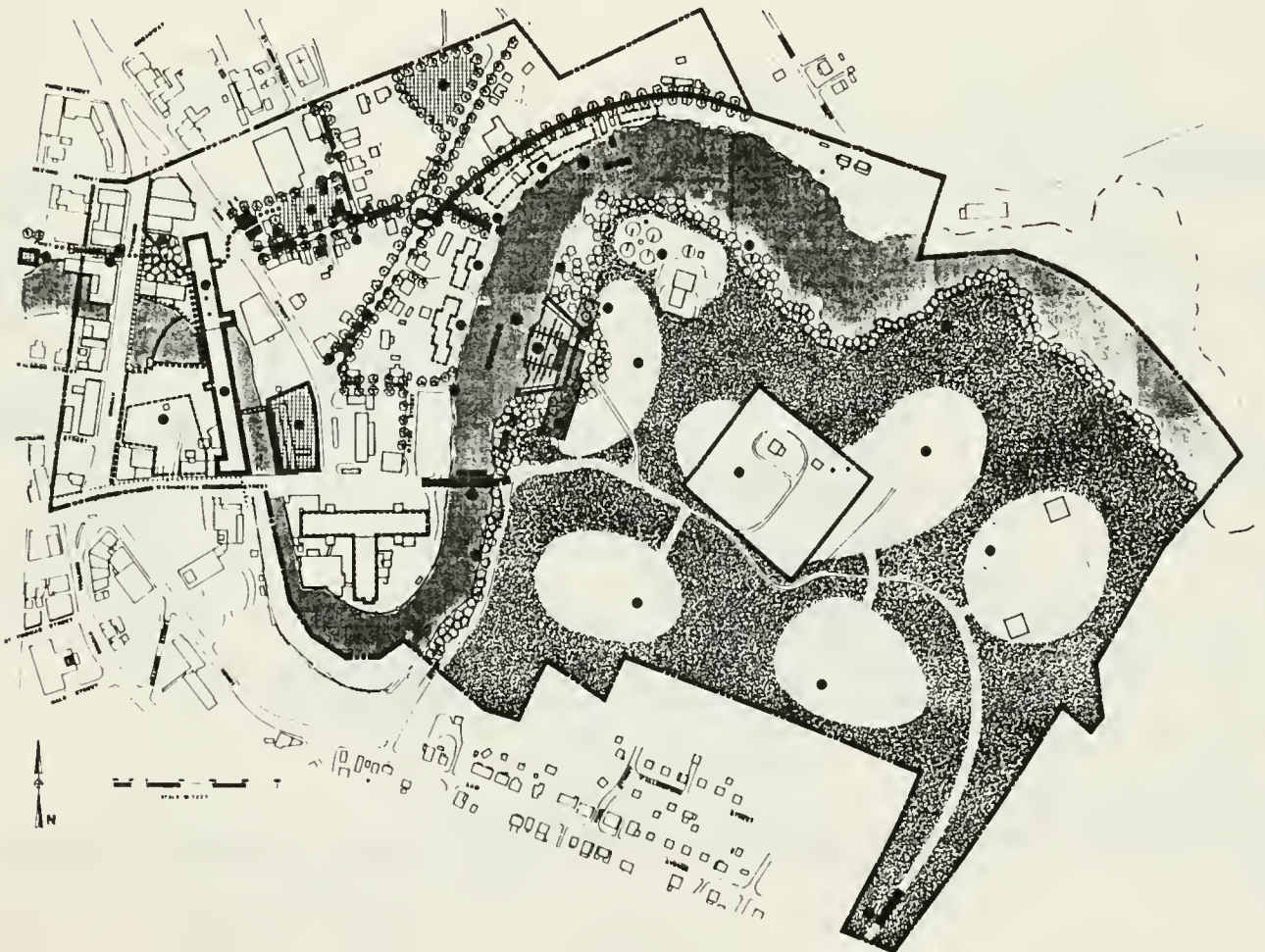


PACIFIC MILLS MASTER PLAN

Dover, New Hampshire

The Pacific Mills Master Plan presents design and development guidelines which suggest dramatic changes for downtown Dover, New Hampshire.

The concepts prepared with Rist-Frost Associates, P.C. and Applied Economics Research both of Laconia, New Hampshire utilize the massive Pacific Mills complex as a vehicle to physically and visually integrate the City's central business district. The plan re-establishes the City's historic role as an inland harbor by emphasizing the Cocheco River waterfront and provides a structure for promoting commercial, retail, office and residential development along its banks. The design recommendations outline strategies by which the community can improve its economic position in a highly competitive seacoast market while suggesting improvements to the image and quality of life in this historic riverfront city.



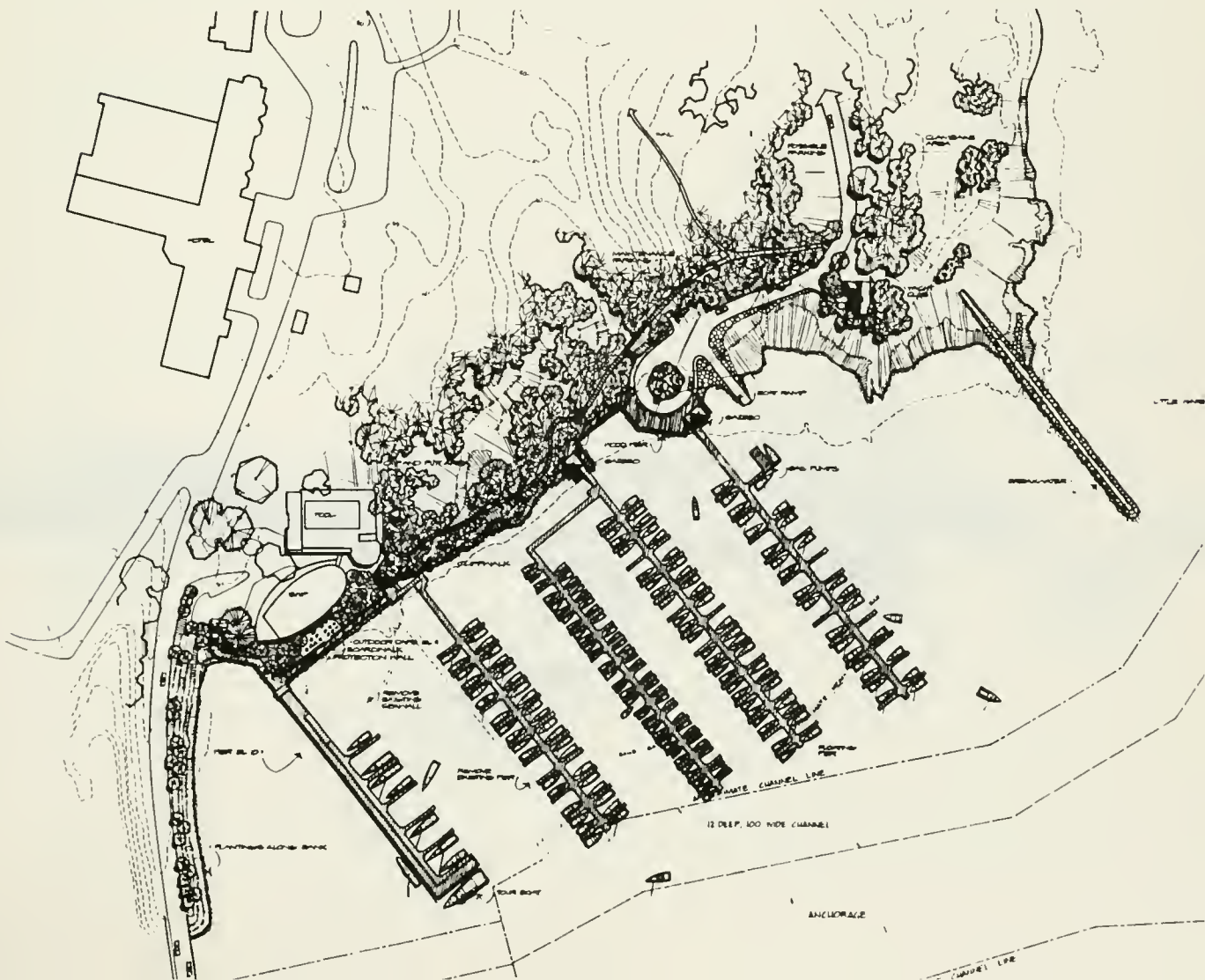


WENTWORTH-BY-THE-SEA MARINA FACILITY

New Castle, New Hampshire

The Wentworth Marina Feasibility Study was done for Pacific Park Corporation with Kimball Chase Company, Inc., Engineers in Portsmouth, New Hampshire. The project is an adjunct facility for the proposed development of the existing Wentworth-By-The-Sea hotel complex.

The proposed marina includes two separate facilities, a visitor marina of 59 slips and a membership marina of 160 slips. The scenic location boasts a well protected, natural harbor with excellent access to the Atlantic Ocean. An outdoor cafe, gazebos, a cliffwalk, promenades, piers, a beach, yacht club, and necessary support facilities are included in the design.



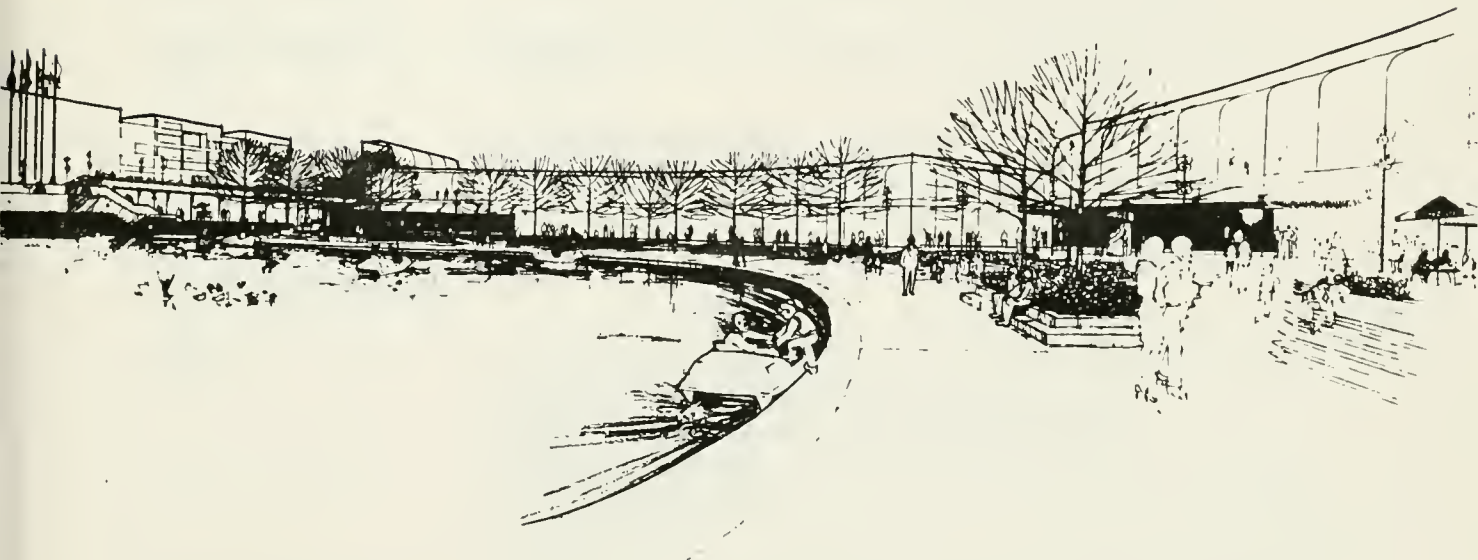
LECHMERE CANAL AND SQUARE

Cambridge, Massachusetts

Cambridge Community Development Department

Design plans for the Lechmere Canal project restructure the existing canal and six acres of adjacent landscaped parks and urban space into the nucleus of a festive commercial and residential complex.

Mr. Halvorson was project manager and principal designer through schematic landscape planning prior to establishing The Halvorson Company, Inc.



RELEVANT PROJECTS

The Halvorson Company, Inc. provides comprehensive professional services in site planning, landscape architecture and site engineering.

The services that The Halvorson Company, Inc. can provide include:

- Site inventory and mapping
- Site analysis, programming and feasibility studies
- Land planning
- Conceptual and schematic design
- Contract and bid document preparation
- Construction observation

Clients for these and related services include city and municipal governments and agencies, institutions, architects and engineers, and private development corporations. The following is a representative list of projects and clients:

MARKET LANDING PARK

Newburyport, Massachusetts

Client: Kathleen D. Field
Former Community Development Director
City of Newburyport, Massachusetts
(401) 351-4300

Project Description: Urban waterfront park on historic Massachusetts town.

Project Similarity: The park serves as a link between the town center and the waterfront.

Key Personnel: Craig Halvorson, Principal-in-Charge
John Tingley, Project Designer

COASTAL CEMENT PARK

Boston, Massachusetts

Client: Mr. Lawrence D. Mammoli
Director of Engineering
Economic Development & Industrial Corporation
10 Drydock Avenue
Boston, Massachusetts
(617) 725-3300

Project Description: Primary park serving Boston's expanding industrial waterfront area.

Project Similarity: The park serves as a visual gateway to the Boston Harbor and provides significant pedestrian access to commercial waterfront activities.

Key Personnel: John Tingley, Principal-in-Charge
and Project Designer

FRONT PARK
Cambridge, Massachusetts

Client: Ms. Eileen Woodford
Office of Community Development
57 Inman Street
Cambridge, Massachusetts 02139
(617) 498-9034

Project Description: Design of a one-acre park that connects the developing residential and commercial East Cambridge district to the Charles River waterfront. Park development marks partial restoration of original Charles Eliot plan for the area.

Project Similarity: The park is a link in a major pedestrian circulation system which provides both visual and physical access to the Charles River for Cambridge residents and office workers.

Key Personnel: Craig Halvorson, Principal-in-Charge

POST OFFICE SQUARE PARK
Boston, Massachusetts

Client: Robert M. Weinberg, President
Friends of Post Office Square, Inc.
50 Federal Street
Boston, MA 02110
(617) 423-1500

Project Description: This new park will provide a valuable open space link between the Boston Common and Boston's increasingly pedestrianized waterfront.

Project Similarity: This park is one of the major pedestrian crossroads in downtown Boston. The Halvorson Company, Inc. is creating a park design which will communicate the spirit and uniqueness of Boston to both Boston residents and the thousands of tourists which visit Boston annually.

Key Personnel: Craig Halvorson, Principal-in-Charge

MYSTIC CENTER DEVELOPMENT

Medford, Massachusetts

- Client:** Ms. Valerie Winig
Cabot, Cabot and Forbes
60 State Street
Boston, Massachusetts
(617) 722-8354
- Project Description:** Previous to the development of the office park, a shopping center and parking lots abutted a portion of an existing Metropolitan District Commission (MDC) park. After a land swap between the developer and the MDC, the development was able to enjoy a closer view of the river and the MDC was able to incorporate part of the development's open space into the park. The developer is also funding the renovation of the park, which abuts the office development.
- Project Similarity:** Both public and private interests compete for waterfront access, both physical and visual. The Halvorson Company, Inc. has been able to effectively work with both the developer and MDC in developing a mutually beneficial park plan.
- Another relevant aspect of the project is that the park has an existing small craft marina that is a significant factor in the park design and renovation. Daily boat access and trailer parking have been incorporated in the design in such a way that it does not detract from the pedestrian and water orientation of the park.

SURVEY OF BOSTON OPEN SPACE

Boston, Massachusetts

- Client:** Ms. Mary Nee, Executive Director
Mayor's Office of Capital Planning
City Hall
Boston, Massachusetts
(617) 725-3494
- Project Description:** Comprehensive inventory and evaluation of 250 parks, squares, malls and urban wilds throughout Boston's 16 neighborhoods. Survey involved evaluation of recreational facilities by neighborhood.
- Project Similarity:** The Halvorson Company, Inc. knows how to conduct a thorough site analysis for park masterplanning and development. We know how to gather the necessary information about parks, both existing and proposed, and put that information to optimum use in designing a park that is responsive to diverse community interests.

POINT PARK

Cambridge, Massachusetts

- Client:** Mr. Joseph Tulimieri, Executive Director
Cambridge Redevelopment Authority
336 Main Street
Cambridge, Massachusetts
(617) 492-6800
- Project Description:** When coming from Boston this park is a gateway to both the City of Cambridge and one of its fastest growing areas, Kendall Square/Cambridge Center. The park is also the most intensely used pedestrian crossroads between MIT, the Kendall Square office community and the MDC's Memorial Drive parkway.
- Project Significance:** The park's design serves both public and private interests and successfully controls pedestrian circulation in order to minimize pedestrian/vehicular conflicts and congestion.
- Key Personnel:** John Tingley, Principal-in-Charge and Project Designer

REVERE BEACH RESERVATION PARK DEVELOPMENT
MASTER PLAN AND PHASE ONE

Revere, Massachusetts

- Client:** Ms. Julia O'Brien
Director of Planning
Metropolitan District Commission
20 Somerset Street
Boston, Massachusetts 02108
(617) 727-9693
- Project Description:** Master plan for historic Revere Beach covering fifty acres of natural parkland, promenades, amusements and visitor services along three miles of beach front. A first phase waterfront park has been built which includes: renovation of an existing bandstand, design of a new pedestrian park shelter based on historic examples, pedestrian oriented signage, graphics and landscaping.
- Project Similarity:** This successfully completed waterfront park is a focal area along a linear pedestrian walkway. Portions of the park are separated by roadways. The park directs one's focus to the ocean.
- Key Personnel:** Craig Halvorson, while a Senior Vice President at Carol R. Johnson and Associates, Inc. was both the project manager for the master plan and the first phase park.
- John Tingley, while at Carol R. Johnson and Associates, Inc. was project designer for the first phase park development.

REFERENCES

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.

Charles Scott
Massachusetts Water Resources Authority
Waterworks Division
Charlestown Navy Yard
100 First Avenue
Boston, Massachusetts 02129
(617) 242-0230

Peter McNulty
Director of Construction
Massachusetts Bay Transportation Authority
Ten Park Plaza
Boston, Massachusetts 02116
(617) 722-3116

Joe Macarrone
Massachusetts Land Bank
Gloucester State Fish Pier
Gloucester, Massachusetts 01930
(617) 283-1938

Wallace Orpin
Director of Engineering
Boston Redevelopment Authority
1 City Hall Plaza
Boston, Massachusetts 02109
(617) 722-4300

David Lenhardt
Parks Engineering
Metropolitan District Commission
20 Sommerset Street
Boston, Massachusetts 02108
(617) 727-1476

Rudi Umsheid
Senior Vice President
Urban Investment and Development Co.
One Copley Place - Suite 600
(617) 262-6600

James Rich
Vice President - Operations Manager
Turner Construction Company
38 Newbury Street
Boston, Massachusetts 02116
(617) 421-5743



Representative Projects and References: Urban Design and Planning

The Halvorson Company, Inc. provides comprehensive professional services for a variety of projects ranging from small urban neighborhood street redevelopment projects to major downtown revitalization projects.

The services that The Halvorson Company, Inc. can provide include:

- * Site inventory, condition assessment and mapping
- * Site analysis, programming and feasibility studies
- * Master planning
- * Conceptual design and schematic design
- * Detail design development and cost estimating
- * Contract and bid document preparation
- * Construction observation and post-installation evaluation

Clients for these and related services include city and municipal governments and agencies, institutions, architects and engineers, and private development corporation. The following is a representative list of projects and clients:

* **PUBLIC FACILITIES DEPARTMENT**

Urban design and streetscape development including street furniture lighting and planning in a variety of Boston neighborhoods.

West Broadway Street Improvements
Hyde Square Improvements Project
Roslindale Square Improvements Project
Dorchester Lower Mills Phase I Improvements Project
Dorchester Lower Mills Phase II Improvements Project
Grove Hall Vest Pocket Park Design Study
Cleary Square Streetscape Improvements

Ms. Stephanie Bothwell
Development Division
Public Facilities Department
City of Boston
15 Beacon Street, 10th Floor
Boston, Massachusetts 02108
(617) 720-4300 ext. 345

* **KENDALL SQUARE - Cambridge, Massachusetts**

Site Preparation Contract #12
Site Preparation Contract #13
Site Preparation Contract #14
Site Preparation Contract #15
Property Management Contract #8
Property Management Contract #9

Mr. Thad Tercyak, Deputy Director
Cambridge Redevelopment Authority
336 Main Street
Cambridge, Massachusetts 02142
(617) 492-6800

* MERCHANTS ROW AT 75 STATE STREET
Boston, Massachusetts

Mr. David Lash
The Beacon Companies
One Post Office Square
Boston, Massachusetts 02109
(617) 451-2100

* BOYLSTON STREET SIDEWALK IMPROVEMENTS
Boston, Massachusetts

Mr. Peter Scarpignato
Department of Public Works
City of Boston
Room 710, City Hall
Boston, Massachusetts 02201
(617) 725-4968





Scope of Services

Project Area

The project area is that portion of Pier 3 in the Charlestown Navy Yard to the west of Dry Dock 2, and additionally seaward of the southerly Dry Dock terminus, conforming to the maximum historic configuration and extending in length to the bounds of shipping channels, pierhead lines, or property lines, whichever is most restrictive. Figure A shows the limit of the work and delineates site development issues.

General Services

The scope of services includes site inspection, condition survey and analyses, park programming, preliminary design, permit assistance, contract documents and bid specifications, and construction phase services.

The phases of the work shall be as follows:

1. Analysis and Planning
2. Preliminary Design and Engineering
3. Construction Contract Documents
4. Construction Phase Services
5. Special Services

1. Analysis and Planning

a. Park Programming

Working along with the Authority, develop a Park Program document to identify the appropriate requirements for the public recreation and open space elements of the project. Paving, planting, railing, graphics, site furniture, site lighting, covered shelters, rest rooms, amphitheater, marina and public fishing area needs will be identified and summarized into a Program Report for the Authority's review and approval.

b. Condition Survey and Site Planning

Prepare an existing conditions investigation including the collection of available data such as the Chapter 131 Notice of Intent and a Chapter 91 license, plans, and surveys. Prepare a land survey of the existing pier including soundings. Prepare a base map using Auto Cad which can be used in subsequent phases of the work. Inventory existing utilities in the pier and evaluate their condition and recommend rehabilitation or replacement. Investigate and evaluate the existing timber portions of Pier 3. Underwater investigation will be performed on timber piles and steel and timber bulkheads will be surveyed and analyzed for remaining useful life and suitability for the proposed programming needs.

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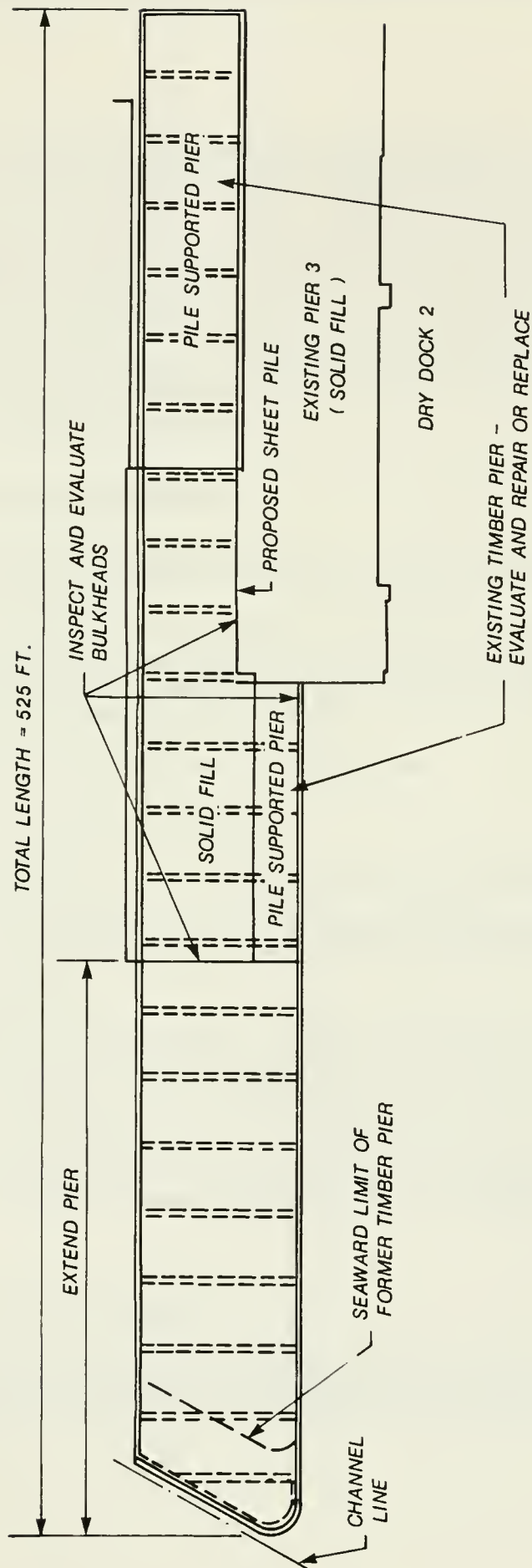


Figure A
Pier 3 Rehabilitation
Site Development Issues



Develop a geotechnical exploration program including contract documents for additional borings necessary to design the pier extension and rehabilitate the existing bulkhead. Site analyses shall be conducted to determine the necessary improvements required to support the park and recreational programming requirements for Pier 3. The park and marine use elements identified in the Program Report will be prepared in plan, section and elevation at the same scale as the pier improvements to facilitate reviews. Utility connections necessary to support the desired programming for Pier 3 i.e. marina service, museum, park lighting, festival lighting and power distribution, water and sewerage, will be provided. Meetings will be held with the Authority and other regulatory agencies including abutting interests such as the National Park Service.

2. Preliminary Design and Engineering

Design Development and Preliminary Engineering plans, outline specifications and cost estimates for the selected pier improvements shall be prepared including the following:

- a. Preliminary layouts and plans , profiles and elevations for alternative pier rehabilitation schemes and the pier extension at a horizontal scale of 1 inch equals 20 feet or any other scale that may be required. Drawings shall be done in india ink on mylar at a sheet size to be determine by the Authority.
- b. Typical sections and details of major appurtenances.
- c. Outline specifications for construction.
- d. Preliminary construction cost estimates for the Park and Pier Rehabilitation schemes.
- e. Assist the Authority in preparing the necessary environmental permits including Chapter 91 License Application, Water Quality Certificate, NPDES, CZM review and Notice of Intent.
- f. Presentation materials as required to discuss the project plan with funding officials and neighborhood groups. It is expected that the design process will include informal meetings with Authority staff on at least a monthly basis.

Note: It is anticipated that final design and development of construction documents for the park facilities will be developed and constructed under subsequent contracts. Therefore, final design and contract documents for these pier elements are not included in our scope of work.

3. Construction Contract Documents

Construction Contract Documents for a single pier rehabilitation improvement contract, shall be prepared in such form and detail as may be required by the Authority on its behalf or on behalf of the PWD or other public agencies and shall include but not be limited to the following:



- a. Final construction drawings complete and ready for advertisement for construction bids for a single construction contract.
- b. Final specifications complete and ready for advertisement for construction bids.
- c. A reproducible copy of all design computations.
- d. A reproducible copy of all the detailed Consultant's estimate of construction cost.

4. Bidding and Award

Upon acceptance of the final submission of the contract documents, assist the Authority in the issuance of bid documents, attend pre-bid conferences and provide design interpretation and assist the Authority in evaluating bids, recommending award or rejection of the construction contract.

5. Construction Phase Services

During construction of the project, check shop drawings submitted by the contractor, develop supplemental sketches required to resolve problems imposed by actual field conditions, review test reports, provide periodic site observation, final inspection and report, and preparation of as-built plans.

6. Special Services

When deemed appropriate, or as directed by the Authority, prepare proposals including estimates of cost to undertake tests or special investigations necessary to the planning, preliminary engineering or design of the proposed improvements. Such proposals shall be submitted to the Authority and, if approved by the Authority, the borings, tests, underwater inspection, or other special investigations shall be obtained in the manner approved.

Proposals for tests or special investigations shall be detailed in a similar manner appropriate for the special work to be undertaken.

Other special services shall include Resident Engineering Services and final design and contract documents for landscape architecture and recreational facilities.



Key Personnel

Parsons Brinckerhoff will perform the engineering services for the Pier 3 Reconstruction with a dedicated Boston based project team specifically established for each task on this project. The team, under the direction of our project manager, Eldon L. Abbott, will include all technical and support personnel required for the successful completion of this important project.

Parsons Brinckerhoff's project organization has been established to provide in a timely manner the design and contract documents for marine reconstruction that are attractive, functional and compatible with the continuing development in the Charlestown Navy Yard.

We are pleased to be joined by a highly regarded landscape architecture firm of The Halvorson Company. The firm has strong credentials in waterfront parks and is currently working with Parsons Brinckerhoff on the Post Office Square Garage and Park project.

We have also included Bryant Associates, Inc. (MBE) and Richard D. Kimball Co., Inc. (WBE) to assist in field survey/utilities and mechanical/electrical work respectively. Both firms are currently working with Parsons Brinckerhoff on pier rehabilitation assignments in Charlestown and Quincy.

Key staff personnel designated for this project are indicated on the project organization chart on the next page. Resumes for these individuals follow.



Project Organization

Reconstruction of Pier 3 Charlestown Naval Shipyard

Parsons
Brinckerhoff

**BOSTON
REDEVELOPMENT
AUTHORITY**

PROJECT MANAGER
E. Abbott

PRINCIPAL IN CHARGE
M. Levy

CIVIL/SITE

A. Boyd
J. Burckardt

MARINE/GEOTECHNICAL

J. Korsgaard
V. Gelfer
R. Rawnsley

LANDSCAPE ARCHITECTURE

C. Halvorson (HC)
C. Smith (HC)

SUPPORT SERVICES

Survey/Utilities: H. Goldberg (BA)

Permits: M. Rowland

Underwater Inspection: New England Divers

Mechanical/Electrical: G. Spinney (RK)
F. Henderson (RK)

Construction Supervision: R. Blowers

Key: (BA) Bryant Associates, Inc.
(RK) Richard D. Kimball Company, Inc.
(HC) The Halvorson Company

MORRIS S. LEVY

Senior Vice President

ASSIGNMENT: Principal-in-Charge**EDUCATION:** Khartoum University, B.S.C.E., 1951
Columbia University, M.S.C.E., 1964**PARSONS BRINCKERHOFF****RELEVANT EXPERIENCE**

Mr. Levy currently directs all planning and design activities in the firm's Boston office. He has over 15 years of extensive experience in many facets of engineering, including highways, bridges, rapid transit projects, port and marine facilities, and building structures. Recent major projects he directed include the following: Copley Place Project, Boston, site improvements for the \$400 million mixed use development; Rowes Wharf, Boston, design review and value engineering services for the waterside and landside structures including wharf structures, steel H-piles and steel sheet pile bulkhead, drilled piers, and slurry walls; and Fan Pier, Pier 4, infrastructure improvements for two major waterfront developments in Boston. He currently serves as Principal for the Post Office Square Underground Parking Garage and for the multi modal transportation improvements at North Station.

ELDON L. ABBOTT

Senior Supervising Engineer

ASSIGNMENT: Project Manager**EDUCATION:** Clarkson College of Technology, B.S.C.E./1966
Clarkson College of Technology, M.S.C.E./1968**PARSONS BRINCKERHOFF****RELEVANT EXPERIENCE**

Mr. Abbott has over 18 years of diversified experience in marine and geotechnical engineering. He recently served as project manager for the Head-of-the-Harbor project in Gloucester, Massachusetts, which involved the development of additional land area, dredging for increased channel depth, and construction of marginal wharfs for the fish processing industry. In addition, he was project manager for the firm's involvement on the rehabilitation study of the historic granite seawalls built in 1710 at the end of Long Wharf in Boston. Eldon also served as supervising geotechnical engineer for the firm's design work on several recent major marine projects, including: Castle Island Marine Terminal in Boston; and two projects in Portland, Maine; the Portland Fish Pier Complex, and the Bath Iron Works Preliminary Engineering Study of a proposed drydock facility. He also managed the evaluation of the existing conditions of Hoosac Pier, Charlestown, Massachusetts. The pier, an existing timber pile-supported relieving platform and enclosed sheet pile bulkhead, was structurally evaluated and preliminary recommendations made for rehabilitating the pier to a 50-year design life. Other marine assignments include fendering replacement at Fall River State Pier, deck rehabilitation at Gloucester State Pier, pile supported platform and access trestle at Kings Bay, Georgia, and design of a Cargo and RO/RO terminal in El Paleto, Venezuela. Mr. Abbott is coauthor of "Rehabilitation of Marine Structures" published in 1981 at the Geo-Pile Conference.



ANDREW B. BOYD

Senior Civil Engineer

ASSIGNMENT: Site Planning**EDUCATION:** Northeastern University, B.S.C.E., 1974**PARSONS BRINCKERHOFF****RELEVANT EXPERIENCE**

Andy has over 14 years of experience including responsibility for site/civil engineering improvements for the \$400 million Copley Place development including streets, utilities, lighting, and structures as well as owner, contractor, architect, and agency coordination; conceptual site/civil engineering of all infrastructure modifications required to accommodate the proposed Prudential Center Master Plan including streets, structures, and utilities and coordination with architects, other consultants, contractor, owner, and local agencies; site/civil engineering of major infrastructure modifications including streets and utilities for the East Side Interceptor, and coordination with the developer, architect, and all public agencies for the Rowes Wharf Development, Boston; site/civil engineering of all infrastructure modifications and site improvements from initiation of environmental review process through construction for the State Street Development, Boston; and site/civil engineering of all infrastructure modifications and site improvements for the Post Office Square Garage Project, Boston.

JENS KORSGAARD**ASSIGNMENT:** Marine Structures**EDUCATION:** Technical University of Denmark, M.S.C.E., 1966**PARSONS BRINCKERHOFF****RELEVANT EXPERIENCE**

Mr. Korsgaard, is a marine facilities engineer at Parsons Brinckerhoff, with over 20 years of extensive experience in project management, planning, feasibility studies, designs, and investigation of marine facilities. His experience includes site selection, soils investigation, hydrographic and oceanographic surveys, environmental investigations, hydraulic model tests, technical assessments, sedimentation analysis, and agitation studies for harbors, breakwaters, foundations in difficult soil conditions, marina and small craft projects, single-point moorings, petroleum port installation, liquefied petroleum gas installations, liquefied natural gas submarine pipelines, and dredgings projects.

Representative project experience includes the following: Project Manager for On-Shore Pier Rehabilitation for the MWRA including underwater inspection, survey, marine structures and transfer facilities for construction equipment and material at the Charlestown Revere Sugar Site and the General Dynamics shipyard in Quincy; responsible for evaluation and redesign of the breakwater for the Acajutla Fishing Port in El Salvador; design of floating breakwaters and retaining walls for the Fan Pier Marina, Boston, Massachusetts hydrographic surveys and planning of the 600 slip expansion of the Atlantic Highland Marina, New Jersey; design of wharfs in the fishing harbor of Guiria, Venezuela, design of construction wharf for an oil terminal in Indonesia, and a LPG terminal in Venezuela. Mr. Korsgaard was worked exclusively in the marine facilities field throughout his career and has published several articles and texts on port related subjects.



VALERY GELFER

Structural Engineer

ASSIGNMENT: Marine Structures

EDUCATION: Institute for Civil Engineering, Moscow, USSR, M.S.C.E., 1969

PARSONS BRINCKERHOFF

RELEVANT EXPERIENCE

Mr. Gelfer is currently a Marine Facilities engineer working on MWRA On-Shore Marine Transportation Facilities, Boston. Previous experience includes: The USSR Government Design Office for 16 years of experience in River Transport; structures analysis and design of port structures, retaining walls, underwater pipelines, dock crane foundation, navigation locks, dry docks, and other marine structures.

JOHN F. BURCKARDT

Civil Engineer

ASSIGNMENT: Civil Engineer

EDUCATION: Northeastern University, B.S.C.E., 1977

Northeastern University, M.S.C.E., 1986

PARSONS BRINCKERHOFF

RELEVANT EXPERIENCE

John is a lead civil engineer with over 11 years of experience on a variety of assignments. For L.L. Bean in Freeport, Maine, he served as project civil engineer for a 700-car parking lot and roadway relocations. For the Charlestown Navy Yard, he served as project civil engineer for a bus and truck garage, vehicle maintenance facility and reconstruction of adjacent streets. For the Westford Technology park, he was project engineer for a 90-acre office/research park. He designed roadways, drainage, utilities and hydrologic analyses. Other civil assignments include I-95/Route 128, Peabody; Post Office Square, Boston; Raytheon Building 4 in Portsmouth, Rhode Island; and MBTA Station Modernization on the Red Line.

ROBERT P. RAWNSLEY

Geotechnical Engineer

ASSIGNMENT: Geotechnical**EDUCATION:** Northeastern University, B.S.C.E., 1977

Northeastern University, M.S.C.E., 1981

PARSONS BRINCKERHOFF**RELEVANT EXPERIENCE**

Mr. Rawnsley with over 8 years of experience has been involved in the analysis, design, and construction of a variety of projects, including cut-and-cover tunnels utilizing a slurry wall, deep foundations consisting of piles and caissons for various structures, approach embankments over deep sensitive soils, and facility planning for an ocean outfall in the Boston area. He served as geotechnical Engineer for the facility planning for a 4 1/2-mile ocean outfall, including diffuser planning, cost estimating, and overall evaluation of the cut and cover alternative for the Deer Island Wastewater Treatment Plant, Winthrop, Boston, and bulkhead design for pier rehabilitation in Charlestown and Quincy for the MWRA. Geotechnical Engineering for the replacement of the \$11 million North Station Railroad Trestle, including evaluation and load testing of existing timber pile bents and design of new piers, abutments. Geotechnical Engineer for the collection, reduction, and evaluation of data for the construction of the new Harvard Square Station on the Massachusetts Bay Transportation Authority (MBTA) northwest corridor extension.

MARILYN J. ROWLAND

Senior Urban Planner

ASSIGNMENT: Permits**EDUCATION:** American University, B.A., International Relations, 1968

Memphis State University, M.C.R.P. City and Regional Planning, 1984

PARSONS BRINCKERHOFF**RELEVANT EXPERIENCE**

Ms. Rowland has over 12 years of experience in city planning, community development, environmental planning and permitting, public participation, computer analysis, program management, and agency liaison. She participated in the preparation of the plan and program for improvements to the existing 200 MGD sewage treatment plant at Deer Island, Boston. Assisted in public participation activities, including editing the project newsletter, maintaining media liaison, analysis of survey so residents and interviews with citizens, participation in advisory group meetings, public meetings, and public hearings. Technical analyses, including a construction traffic impact study and an analysis of the environmental impacts to altering the coastal geography in an attempt to improve water quality. She also prepared the environmental permit applications for reconstruction of a 2300-foot long seawall, including U.S. Army Corps of Engineers permit, Rhode Island Port Authority Environmental Review Form, and Coastal Resources Management Council review and preparation of environmental permit applications, including U.S. Army Corps of Engineers, Notice of Intent under the Massachusetts Wetlands Protection Act, Environmental Protection Act, Chapter 91 (Waterways License) application, Water Quality Certificate application, and Coastal Zone Consistency Statement, Preparation of Coastal Facilities Pier; and of the project summary document



ROBERT A. BLOWERS

Civil Engineer

ASSIGNMENT: Construction Supervisor

EDUCATION: Franklin Institute of Boston, A.S.C.E., 1963
Northeastern University, B.S.C.E., 1986

PARSONS BRINCKERHOFF

RELEVANT EXPERIENCE

Mr. Blowers is experienced in site condition surveys, civil design, reports, planning, and full time resident engineering on a variety of construction projects including: resident inspection for the \$5.5 million Castle Island Terminal, including monitoring all steel and concrete work, record-keeping, reports, quality control, calculations, and coordinating contract document interpretations with the general contractor and subcontractors; resident engineer for the \$3 million Head-of-the-Harbor Fish Pier, responsible for monitoring all phases of construction, including pile driving, utility work, concreting, dredging. Project included additional berthing facilities created by reclaiming one acre of land at the site for a bulkhead/embankment dike and two marginal wharfs. Other assignments include master plan for Gloucester State Fish Pier; fender repairs at Fall River State Pier; Quonset Point Seawall; and the site improvements at Charlestown and Quincy pier sites for the MWRA's On-Shore Transportation Facilities.

HOWARD GOLDBERG

Vice President

ASSIGNMENT: Survey

EDUCATION: Northeastern University, B.S.C.E.
Northeastern University, M.S.C.E.

BRYANT ASSOCIATES, INC.

RELEVANT EXPERIENCE

Mr. Goldberg has extensive and varied experience in highways, subways, railroads, streets, utility relocations, traffic environmental studies, and all types of surveys. He recently managed the survey, site and civil engineering designs for the upgrading of Massport's Moran Cargo Terminal, a major containerport and the on-shore pier rehabilitation for the MWRA. The same was provided for Massport's Conley Terminal several years earlier. He has also been Project Manager for several other Massport projects including the design and construction administration of the reconstruction of Northern Avenue Phases I and II/III including emergency repairs and condition survey to the existing Quay Wall, the 1600 car parking lot on Commonwealth Flats, the Northern Avenue Sanitary Sewer and the Summer Street Pump Station all in support of waterfront and marine industry development, such as the First Pier, World Trade Center, etc. In previous designs for Massport, he was Project Engineer for portions of the Logan Airport Maintenance Road, and site development at Bird Island Flats.

KEY PERSONNEL

GEORGE F. SPINNEY

President

ASSIGNMENT: Electrical

EDUCATION: Dartmouth College, 1949

RICHARD D. KIMBALL CO., INC.

RELEVANT EXPERIENCE

Mr. George Spinney has over 34 years of mechanical design experience for building systems of all types including wastewater treatment facilities. He has recently been principal-in-charge for evaluation of the mechanical equipment for the Deer Island Facilities Plan, Boston, Massachusetts HVAC and plumbing design for Wastewater Treatment Plan, Rochester, New Hampshire; and the Water Recirculation Design for reuse of wastewater for laboratories at the Army Materials and Mechanics Research Center, Watertown, Massachusetts. Currently, he is designing the HVAC system for the \$22 million dollar Nashua, New Hampshire wastewater treatment plant. Additionally, Mr. Spinney will be assisting in the management of the construction improvements to Deer Island Wastewater Facilities.

FLOYD HENDERSON

Electrical Engineer

ASSIGNMENT: Electrical/Mechanical

EDUCATION: Manitoba University, B.S.C.E., 1970

RICHARD D. KIMBALL CO., INC.

RELEVANT EXPERIENCE

Mr. Henderson is an electrical engineer with seventeen years of experience in the design and supervision of many industrial, commercial, educational, residential and health care facilities. He has also been involved in water supply and wastewater treatment plants. Mr. Henderson was the electrical engineer in charge of the design and supervision for the one million dollar high velocity pumping station supplying water to the Town of Thompson, Manitoba, Canada and to the mining facilities of the International Nickel Company.

Mr. Henderson is currently involved in the construction supervision for the Deer Island Sewage Treatment Facility, Power Plant and Lift Station in Boston, Massachusetts, the Water Meter Modernization at 72 waterflow stations for the Quabbin Reservoir water distribution system and the design and construction supervision of electrical systems for a new secondary sewage treatment plant in Lynn, Massachusetts.

CRAIG C. HALVORSON
Principal

Mr. Halvorson was graduated with honors from the University of Massachusetts in 1966. He was recipient of the Certificate of Merit for Excellence in the study of landscape architecture from the American Society of Landscape Architects. He began his professional career with the firm of Mason and Frey in Cambridge, Massachusetts. In 1968 he returned under scholarship to the University of Massachusetts for graduate study in Landscape Architecture and Regional Planning. Concurrently, he worked for the office of Research, Planning and Design Associates in Amherst, Massachusetts. Upon completing his graduate degree he joined the firm of Johnson and Dee in Avon, Connecticut.

In 1971 Mr. Halvorson returned to Cambridge, Massachusetts accepting an offer from Carol R. Johnson & Associates, Inc. He remained with that office for nine years. As Senior Vice President he was involved in management decisions in addition to his responsibilities as a principal designer and project manager. Between 1973 and 1975 he was an adjunct professor of landscape architecture at the Rhode Island School of Design in Providence, Rhode Island. In 1984 Mr. Halvorson served as a member of the AIA Regional Design Assistance Team in Albuquerque, New Mexico.

In 1980, he founded The Halvorson Company, Inc., a firm specializing in landscape architecture and site planning. Mr. Halvorson serves as President of the firm and is a Director. He is a registered landscape architect in the states of Massachusetts, Maine, Rhode Island, Connecticut and Virginia. He is also certified with the Council of Landscape Architectural Registration Boards.



CYNTHIA WEBSTER SMITH
Senior Associate

After ten years of professional practice at the SWA Group and Sasaki Associates, Ms. Smith has joined The Halvorson Company, Inc. as a Senior Associate. Her experience includes comprehensive park and open space planning and design; urban design; waterfront, corporate and institutional work.

Ms. Smith received her Bachelor of Landscape Architecture at the University of Oregon in 1976. She then worked for six years at Sasaki Associates in Watertown, MA. where her responsibilities as an associate ranged from conceptual design through preparation of construction documents including the recently completed Smithsonian South Quadrangle project in Washington, D.C. and several waterfront park projects.

In 1984 she received a Master of Landscape Architecture in Urban Design from Harvard University. She joined The SWA Group in the same year as a project team captain and designer. While at The SWA Group Ms. Smith worked on the planning and design of several projects including the Springside project, a 35 acre, 100 unit residential development which included preservation of 20 acre historic landscape designed by Andrew Jackson Downing; several office park developments and a mixed use waterfront development. She was project landscape architect for a 1,000 acre resort/ residential development, Heritage Greylock, which has received a 1987 Boston Society of Landscape Architect's Award.

Ms. Smith has been an instructor in Landscape Architecture for the Radcliffe Seminars. She is also the New England Representative for the Alumni Council for Harvard University, Graduate School of Design and is the Vice President for the Boston Society of Landscape Architects. She is a Registered Landscape Architect in the Commonwealth of Massachusetts.



ANN FRICK

Associate

Ms. Frick was graduated from Bowdoin College in 1977 with a Bachelor of Arts degree in history. In 1983 she received a Master of Landscape Architecture degree from the University of Virginia. While in Virginia she worked for the Charlottesville firm of Rieley & Associates as a staff landscape architect.

Ms. Frick joined the firm of William Pressley & Associates, Inc. in 1983, where her responsibilities included design and presentation before public agencies, client coordination, the preparation of contract documents, and site supervision. She was made an associate in 1984 and a Senior Associate in 1985, by which point her representative projects included various projects for Harvard University, urban site design for New England Medical Center, and a number of commercial developments.

Ms. Frick joined The Halvorson Company, Inc. in 1985 as a staff landscape architect becoming an Associate in 1988. Her responsibilities include project administration and management, site design and construction document preparation. She is a registered landscape architect in the Commonwealth of Massachusetts and a resident of Boston.

APRIL POTTER

Ms. Potter was graduated from Cornell University in 1986 with a Master's Degree in Landscape Architecture. While pursuing her degree she was employed by the Campus Planning Office and wrote landscape design guidelines for several towns participating in the Department of Regional Planning's small town revitalization program. Prior to graduate school Ms. Potter worked for two years with Theodore Osmundson & Associates of San Francisco, California.

Upon receiving her degree, Ms. Potter joined the firm of Keith French & Associates in Portland, Maine. She was responsible for conceptual design, design development and the preparation of construction documents for a variety of projects including a downtown revitalization project, a recreational and athletic waterfront complex and a number of commercial and institutional projects.

In 1988, Ms. Potter joined The Halvorson Company, Inc. where she is a staff landscape architect with responsibilities for site design and construction document preparation. Ms. Potter is a resident of Boston.



Ability to Work With Public Agencies

Parsons Brinckerhoff has been serving New England clients for over 30 years. During that time we have designed and managed the construction of numerous projects many of which have required intense reviews by public agencies, city and special interest groups, and permitting agencies.

Recent examples include:

- o Extensive public participation and agency reviews for the Deer Island Facilities Plan for the Massachusetts Water Resources Authority.
- o Environmental reviews and permits from the City of Boston, National Park Service and Friends of the Common for various vent shafts in downtown Boston for the MBTA.
- o Permits for the construction of the new Fish Pier at Head of the Harbor in Gloucester.
- o Permits and coordination with the City of Boston, U.S. Coast Guard, Army Corps and several utility companies for the site improvements at Rowes Wharf.
- o Coordination with the City of Boston for the site work on the 75 State Street Project in downtown Boston.

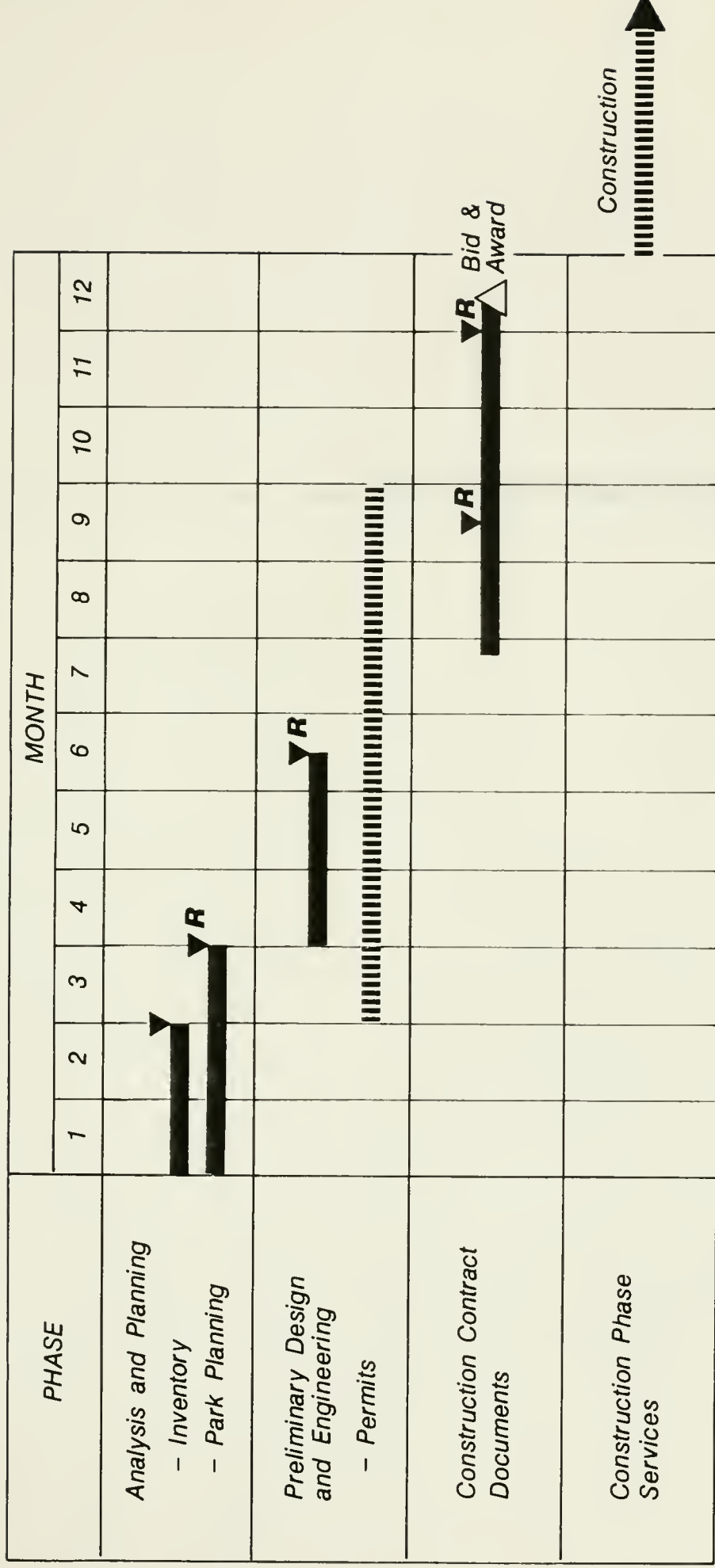
Ability to Complete Services

Parsons Brinckerhoff has the capability to expeditiously provide the necessary services for the reconstruction of Pier 3. We offer the following:


- o Available and skilled personnel in all the required disciplines.
- o Familiarity with the context of redevelopment at the Charlestown Navy Yard based on our involvement in the early planning and infrastructure improvements.
- o On-going project team in place providing similar pier rehabilitation services means we can start immediately with minimal start-up costs.
- o Proven record of accomplishment, design excellence, innovation, and quality service to a variety of clients in Boston.

Schedule

We have shown on the following pages our anticipated project schedule. We have shown the timing of deliverables and sequencing of tasks for all phases of the work. The subtasks by phase have been omitted to simplify the diagram. They will be included on the work flow diagram to be prepared at the beginning of the project.



R Review

 Submittals

Schedule Pier 3 Reconstruction

Estimate of Costs

As requested in the RFP and based on our understanding of the project and Scope of Services outlined in this proposal, we have estimated the total design costs for this assignment. Our team's billing rates are as follows:

Parsons Brinckerhoff Quade & Douglas, Inc.

<u>Classification</u>	<u>Hourly Rate</u>
Project Manager	\$89
Senior Engineer	65
Engineer	50
Drafter	43

The Halverson Company

<u>Classification</u>	<u>Hourly Rate</u>
Principal	\$65
Project Director	52
Project Landscape Architect	39
Staff Landscape Architect	32

Bryant Associates, Inc.

<u>Classification</u>	<u>Hourly Rate</u>
Chief Surveyor	\$69.13
Sr. Technician	38.14
Party Chief	32.30
Drafter	28.60
Instrumentperson	25.03
Rodperson	20.26

Kimball Associates, Inc.

<u>Classification</u>	<u>Hourly Rate</u>
Principal Engineer	\$70
Senior Mechanical/Electrical	65
Mechanical/Electrical	60
Designer/Engineer	50
Computer Technician	45
Senior Drafter	40
Junior Drafter	38

A detailed breakdown of our estimated design costs are shown on the following page.

PHASE	Project Management & Coordination	Marine Facilities	Marine Structures	Geotechnical	Landscape Architecture	Subconsultants		TOTAL
						Bryant-Survey/Utilities	Kimball-Mechanical/Electrical	
Analysis and Planning	10,080	2480	22,275	12,000	18,480	9751	2050	\$77,116
Preliminary Design and Engineering	7520	1510	37,125	2000	6550	13,200	4700	\$72,605
Construction Contract Documents	5100	4100	49,500	1000	—	19,600	6120	\$85,420
Construction Phase Services	2480	1950	14,850	500	—	4103	2180	\$26,063
TOTAL	\$25,180	\$10,040	\$123,750	\$15,500	\$25,030	\$46,654	\$15,050	\$261,204

Diving	3,000
Borings	10,000
Printing & Misc.	15,000
TOTAL	\$289,204

Estimate of Costs
Pier 3 Reconstruction

Residency and Affirmative Action Compliance

At Parsons Brinckerhoff, our Affirmative Action Program consists of three areas in which we focus attention: employees, minority business enterprise, and suppliers. Our employee Affirmative Action Policy promotes the principle of Equal Employment Opportunity. Accordingly, all recruiting, hiring, and promoting for all job classifications are made without regard to race, color, religion, marital status, age, sex, national origin, ancestry, or handicap.

Our focus during the last several years has been on training and promoting from within. We have conducted a work study program with local universities in which a significant number of students were minorities and women. We believe that this is the most effective way to increase the pool of qualified candidates. We have also participated actively with Northeastern University in introducing minority high school students to the engineering and architectural profession. In addition, we employ minority trainees in drafting and surveying. The results of this program are evaluated and updated yearly.

Our Minority Business Enterprise program consists of continual monitoring of sources of information about minority firms that are qualified to participate in our work effort. Whenever possible, we include minority subcontractors in our proposals. We are always alert to new firms and immediately initiate contacts about future work. This effort has enabled us to field, not only the most qualified technical team, but to include qualified minority associates.

Also, to the extent possible within the time and scope limitations of this project, we would seek and identify opportunities to utilize minority vendors needed in various areas. Such areas would include office suppliers, printing and reproductions as well as other related services. In addition, we recently established an account with the Boston Bank of Commerce, a minority enterprise.

Our team for the proposed project includes:

- o Bryant Associates Inc. (MBE) - Survey & Utilities
- o Richard D. Kimball Company, Inc. (WBE) - Mechanical/Electrical

As we have done on similar Boston projects, we will bring those Boston area students who express interest in engineering, or architecture into the actual design process. These students will work with the professional staff and participate in the development of the project.



Parsons Brinckerhoff's Affirmative Action statistics are presented below. These figures, current as of April 1987, indicate that the minorities/females comprise 13 percent of the firm's managerial level staff, 40 percent of the professional level staff, and 50 percent of the technical level staff. Overall figures indicate that over 40 percent of the staff are minority/female. This table emphasizes our commitment to Affirmative Action and, further, that we have implemented the program successfully.

PARSONS BRINCKERHOFF AFFIRMATIVE ACTION STATISTICS

Number of Employees

<u>Job Categories</u>	<u>Totals</u>	<u>M/W</u>	<u>M/B</u>	<u>M/H</u>	<u>M/A</u>	<u>M/I</u>	<u>F/W</u>	<u>F/B</u>	<u>F/H</u>	<u>F/A</u>	<u>F/I</u>
Officials and Managers	378	330	3	10	27	-	7	1	-	-	-
Professionals	642	384	20	13	89	2	111	6	5	12	-
Technicians	269	135	10	14	29	1	65	6	5	4	-
Office and Clerical	180	15	4	3	1	-	100	37	8	11	1
Total	1,469	864	37	40	146	3	283	50	18	27	1

M - Male W - White
 F - Female B - Black
 H - Hispanic
 A - Asian or Pacific Islander
 I - American Indian or Alaskan Native

AFFIRMATIVE ACTION
POLICY STATEMENT

It is, and shall continue to be, the policy of PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC. to eliminate and avoid discrimination against any employee or applicant for employment because of race, color, religion, marital status, age, sex, sexual orientation or affectional preference, national origin, ancestry, or handicap.

It is, and shall continue to be, the policy of PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC. to base all decisions concerning employment so as to promote the principle of Equal Employment Opportunity. Accordingly, all recruiting, hiring and promoting for all job classifications will be made without regard to race, color, religion, marital status, age, sex, sexual orientation or affectional preference, national origin, ancestry, or handicap (except in the case of a bona fide occupational qualification). Only valid requirements for promotional opportunities are imposed.

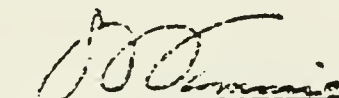
We shall make every effort to ensure that all personnel actions, including, but not limited to, classifications, compensation, benefits, recruitment, transfers, promotions, layoffs and rehires from layoffs, company-sponsored social recreational programs and facilities will be administered without regard to race, color, religion, marital status, age, sex, sexual orientation or affectional preference, national origin, ancestry, or handicap (except in a case of bona fide occupational qualification).

The Board of Directors of the firm and its officers are familiar with, and support completely, all elements of the Affirmative Action Program.

APPROVED:

1/20/88

Date



James L. Lammie, President

AFFIRMATIVE ACTION POLICY/PLAN STATEMENT

The Halvorson Company, Inc. hereby adopts the following Affirmative Action Policy and Plan:

A. General

1. The Halvorson Company, Inc. will not discriminate against any employee or applicant for employment because of race, creed, color, national origin or sex. The Halvorson Company, Inc. will take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to their race, creed, color, national origin or sex. Such action shall include but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment/advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Halvorson Company, Inc. agrees to post in conspicuous places, available to employees and applicants for employment, the provisions of this non-discrimination policy.
2. The Halvorson Company, Inc. will, in all solicitations or advertisements for employees placed by or on behalf of The Halvorson Company, Inc., state that all qualified applicants will receive consideration for employment without regard to race, creed, color national origin or sex.
3. The Halvorson Company, Inc. will permit access to all books, records, and accounts pertaining to its employment practices by the Federal, State or Local Offices of Human Rights, their representatives, Contracting Officers, or agents for purposes of investigation to ascertain compliance with this provision.

B. Utilization of Minority Business Enterprises

1. It is the policy of The Halvorson Company, Inc. that minority business enterprises shall have the maximum practicable opportunity to participate in the performance of its contracts.
2. The Halvorson Company, Inc. agrees to use its best efforts to carry out this policy in the award of its sub-contracts to the fullest extent consistent with the efficient performance of its contract work.

EMPLOYEE CLASSIFICATION MATRIX

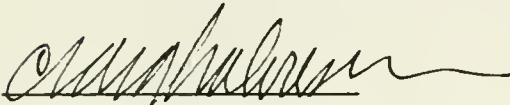
CLASSIFICATION	TOTAL EMPLOYEES		TOTAL MINORITY		PERCENT	
	M	F	M	F	M	F
LANDSCAPE ARCHITECTS (REGISTERED)	6	2	0	0	75	25
TECHNICIANS	4	4	0	1	44	56
CLERICAL	0	3	0	0	0	100
TOTALS	10	9	0	1	50	50



C Applicability to Sub-Contracts

1. The Halvorson Company, Inc. will include the provisions of the foregoing paragraphs in every sub-contract, unless superceded by rules, regulations or orders of the Federal, State or Local Government, so that such provisions will be binding upon each sub-contractor or vendor.

By:


Craig C. Halvorson

Date:

10/26/1988

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